VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a Minor, Industrial permit. The effluent limitations contained in this permit will maintain the Water Quality Standards (WQS) of 9VAC25-260. The discharge results from the treatment of poultry processing wastewater and sanitary wastewater generated within the poultry processing facility and stormwater generated in the area surrounding the facility (SIC Code: 2015 – Poultry slaughtering and Processing). This permit action consists of reissuing the permit with revisions to the permit, as needed, due to changes in applicable laws, guidance, and available technical information.

1. Facility Name and Address:
   VPGC, LLC - Hinton
   PO Box 228
   Hinton, VA 22831
   Location: 6349 Rawley Pike, Hinton, Virginia 22831

2. Permit No. VA0002313; Expiration Date: November 30, 2014

   The permit was administratively continued on December 1, 2014. Processing of the permit was delayed due to permittee objections to the nutrient monitoring requirements for Outfall 004.

3. Owner: VPGC, LLC
   Contact Name: Ronald Harrison
   Title: Environmental Manager
   Telephone No: 540.867.4366
   Email: rharrison@vapgc.com

4. Application Complete Date: June 10, 2014

   Permit Writer: Bev Carver Date: August 14 and 27, 2014
   Reviewed By: Dawn Jeffries Date: August 18, 2014, September 2, 2014

   Public Comment Period: December 3, 2014 to January 2, 2015

5. Receiving Stream Name: Muddy Creek (Outfalls 001 and 003), War Branch (Outfalls 002, 004 and 005)

   River Mile: See Appendix B, page 2
   Use Impairment: Yes
   Special Standards: pH
   Tidal Waters: No
   Watershed Name: VAV – B22R Muddy Creek
   Basin: Potomac; Subbasin: Shenandoah
   Section: 5; Class: IV

6. Operator License Requirements per 9VAC25-31-200.C: II

7. Reliability Class per 9VAC25-790 (Outfall 101 - sewage treatment works): II (assigned July 23, 2002)

8. Permit Characterization:
   ☑ Private ☐ Federal ☐ State ☐ POTW ☐ PVOTW
   ☐ Possible Interstate Effect ☐ Interim Limits in Other Document (attach copy of CSO)

9. Description of Wastewaters and Treatment Facilities: **Appendix A**

   Total Number of Outfalls = 5 external (001, 002, 003, 004 and 005), 2 internal (101 and 102)
   Operation and Maintenance (O&M) Manual Approval: February 16, 2010

10. Discharge Location Description and Receiving Waters Information: **Appendix B**

11. Antidegradation (AD) Review & Comments per 9VAC25-260-30:
    Tier Designation: 1

    The State Water Control Board's WQS include an AD policy. All state surface waters are provided one of three levels of AD protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 waters have water quality that is better than the WQS. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 waters are exceptional waters and are so designated by regulatory amendment. The AD policy prohibits new or expanded discharges into exceptional waters.

    The antidegradation review begins with a Tier determination. Muddy Creek in the vicinity of the discharge is determined to be a Tier 1 water. This determination is based on the fact that this facility discharges to a segment of Muddy Creek that is listed as impaired for Benthics. Antidegradation baselines are not calculated for Tier 1 waters.

12. Site Inspection: Performed by Bev Carver on February 21, 2014 and August 11, 2014

13. NPDES Permit Rating Worksheet: **Appendix A**
    The worksheet updated using current information regarding the facility.
    ☐ Major ☑ Minor Score = 70

14. Effluent Screening and Effluent Limitations: **Appendix C**

15. Effluent Toxicity Testing Requirements included per 9VAC25-31-220.D: ☑ Yes ☐ No **Appendix C**

16. Management of Sludge:

    a. Sewage sludge from this facility is hauled to North River WWTF (VA0060640) for further treatment and disposal.

    b. Industrial sludge from the DAF #1 serving the first part of the industrial WWTP is hauled to Valley Proteins-Linville for rendering.

    c. Industrial sludge from the DAF #2 serving the TP nutrient removal portion of the industrial WWTP is hauled to Enviro-Organic Technologies, Inc. in New Windsor, Maryland.

17. Permit Changes and Bases for Special Conditions: **Appendix D**

18. Material Storage per 9VAC25-31-280.B.2: This permit requires that the facility's O&M Manual include information to address the management of wastes, fluids, and pollutants which may be present at the facility, to avoid unauthorized discharge of such materials.

19. Antibacksliding Review per 9VAC25-31-220.L: This permit complies with the antibacksliding provisions of the VPDES Permit Regulation.

20. Impaired Use Status Evaluation per 9VAC25-31-220.D: Muddy Creek in the vicinity of the discharge is listed as impaired for bacteria and for not meeting the General Standard (Benthics) for aquatic life use.

    TMDLs addressing these local impairments include the following wasteload allocations (WLAs) for this discharge:

    a. TSS and Phosphorus – The Muddy Creek and Holmans Creek Watershed TMDL for Sediment and Phosphorus was approved by EPA on May 1, 2003.A Sediment WLA of 284,860 lb/year was specified for this facility. This represents a monthly average loading of 354 kg/day.

       The phosphorus TMDL for Muddy Creek is for the upper portion of the watershed. No phosphorus WLA was specified for VPGC, LLC.

    b. Fecal coliform – The Muddy Creek Watershed Bacteria TMDL was approved by EPA on September 1, 1999. A fecal Coliform WLA of 8.34×10^{8} cfu/day was specified for this facility.

    c. Nitrate – The Muddy Creek Watershed Nitrate TMDL was approved by EPA on April 27, 2000. A WLA for Nitrate was not specified. Appendix C of the TMDL did specify a 35% reduction for this facility from pre-TMDL levels.

       A memo dated June 24, 2002 (see Appendix C) was prepared which provided an interpretation of the reduction called for in the TMDL. The interpretation of what was called for in the TMDL was that the Nitrate WLA for this facility would be 49,389 lbs/year. This WLA represents a 35% reduction in Nitrates at this facility from pre-TMDL levels.

       The Nitrate WLA of 49,389 lb/yr was imposed in the 2004 and 2009 permit reissuances.

       The Nitrate impairment was delisted in the 2010 Integrated Report on Water Quality; however, the nitrate TMDL reduction specified in the Muddy Creek Watershed Nitrate TMDL remains.

    The Chesapeake Bay TMDL specifies allocations for Total Nitrogen (TN), Total Phosphorus (TP), and sediment that resulted from EPA's evaluation of the jurisdictions' final Phase I WIPs as described in Section 8 of the TMDL. Table 9-4 of Appendix Q contains the following WLAs for this discharge:

    a. TN – A WLA of 27,410 lb/year is specified for this facility. This WLA is the same as the WLA specified for TN for this facility in the Registration List as part of the Nutrient General Permit Regulation at 9VAC25-820-70.

    b. TP – A WLA of 1,371 lb/year is specified for this facility. This WLA is the same as the WLA specified for TP for this facility in the Registration List as part of the Nutrient General Permit Regulation at 9VAC25-820-70.

    c. TSS – A WLA of 66,649 lb/year is specified for this facility. The TSS WLA for this facility is not on the Registration List as part of the Nutrient General Permit Regulation at 9VAC25-820-70.

21. Regulation of Users per 9VAC25-31-280.B.9: N/A – There are no industrial users associated with this facility other than the owner.

22. Stormwater Management per 9VAC25-31-120: Application Required? ☑Yes ☐No

23. Compliance Schedule per 9VAC25-31-250: None required by this permit.

24. Variances/Alternative Limits or Conditions per 9VAC25-31-280.B, 100.H, and 100.M: None.

25. Financial Assurance Applicability per 9VAC25-650-10: N/A – This facility does not serve private residences.

26. Virginia Environmental Excellence Program (VEEP) Evaluation per § 10.1-1187.1-7: At the time of this reissuance, is this facility considered by DEQ to be a participant in the Virginia Environmental Excellence Program in good standing at either the Exemplary Environmental Enterprise (E3) level or the Extraordinary Environmental Enterprise (E4) level? ☐ Yes ☑ No

27. Nutrient Trading Regulation per 9VAC25-820: See Appendix C
    General Permit Required: ☑ Yes ☐ No
    Permit No.: VAN010009

28. Nutrient monitoring included per Guidance Memo No. 14-2011: ☑ Yes ☐ No

29. Threatened and Endangered (T&E) Species Screening per 9VAC25-260-20 B.8: Because this is not an issuance or reissuance that allows increased discharge flows, nor was a review requested, T&E screening is not required.

30. Public Notice Information per 9VAC25-31-280.B: All pertinent information is on file, and may be inspected and copied by contacting Bev Carver at: DEQ-Valley Regional Office, P.O. Box 3000, Harrisonburg, Virginia 22801, Telephone No. (540) 574-7805, beverley.carver@deq.virginia.gov.

    Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

31. Historical Record:

    a. The processing plant began operating in 1946.
    b. In May 1962, the daily discharge flow was stated to be 0.1 MGD.
    c. All domestic sewage from the plant was directed into a septic tank/drainfield system.
    d. Treatment of poultry processing wastewater began on September 1, 1963 (treatment consisted of a grease trap and a settling tank.)
    e. The wastewater treatment facilities were upgraded in 1971. Upgraded facilities included settling, re-circulating trickling filtration, post aeration, and disinfection using chlorination.
    f. An air flotation unit and chemical coagulation equipment were added in 1973.
    g. A submerged aeration system following the tricking filter was added during the summer of 1974.
    h. An upgraded facility with a design flow of 0.262 MGD was proposed in 1975.
    i. VPDES Permit No. VA0002313 was reissued on December 12, 1989 to Wampler Longacre, Inc.
    j. As of 1991, the industrial treatment facilities consisted of fine screening, chemically assisted DAF, flow equalization, extended aeration, activated sludge biological treatment, and clarification. The design flow of industrial treatment facilities was 0.52 MGD. Sanitary wastes were discharged to a separate package plant for treatment. The design flow of the sanitary package plant was 0.02 MGD. The effluent from both the sanitary and industrial treatment facilities were combined, chlorinated, and

dechlorinated prior to discharge through Outfall 001. The chlorination and dechlorination facilities were designed to treat 0.54 MGD.

k. A permit application dated June 9, 1999 was submitted by Wampler Foods, Inc.
l. VPDES Permit No. VA0002313 was reissued to Wampler Foods Inc. on December 12, 1999.
m. Plans & Specifications for a new 0.020 MGD sewage treatment facility were approved on July 23, 2002.
n. A CER for a 1.5 MGD industrial wastewater treatment facility was approved on July 24, 2002.
o. The plant upgrade was completed in October 2002.
p. VPDES Permit No. VA0002313 was modified on November 9, 2004 to change the owner from Pilgrims Pride Corporation to Virginia Poultry Growers Cooperative.
q. In a letter dated February 3, 2009, Virginia Poultry Growers Cooperative requested a domestic outfall relocation. The proposal was to keep the sanitary WWTP and the industrial WWTP totally separated. Then the sanitary WWTP and industrial WWTP final effluents would share the same outfall 001 to Muddy Creek. Prior to this change, the industrial flow and domestic flow had been combined in the industrial de-chlor contact tank, dechlorinated and discharged through outfall 001.
r. On October 19, 2009, DEQ approved a UV light disinfection system designed to treat the process wastewater flow from this facility. The permittee changed from chlorine disinfection to UV disinfection for the industrial WWTP in January 2010. The permittee changed from chlorine disinfection to UV disinfection for the Sewage Treatment Plant in January 2010.
s. A Concept Engineering Report for the Phosphorous Removal System was approved on January 20, 2010. The primary treatment units included a coagulation tank, flocculation tank, polymer feed system, dissolved air flotation unit and solids handling and storage facilities.
t. On March 15, 2010 DEQ approved an Optimization Plan – Phosphorus Removal System. Because the phosphorus removal efficacy for the system had only been demonstrated in bench- scale tests, a six month optimization study was required for the full-scale system.
u. On September 1, 2011, DEQ approved Optimization Plan – Phosphorus Removal System, Phase II. The Phase II plan included phosphorus removal tower filters to further reduce the phosphorus concentration in the effluent. A two-year optimization study evaluation of the equipment's ability to remove phosphorus was to be performed.
v. The permit was modified on January 16, 2013 to reflect a change in ownership from Virginia Poultry Growers Cooperative, Inc., to VPGC, LLC.
w. On January 1, 2012 the 2-year optimization plan for TP removal was begun. The 2-year study ended on December 31, 2013.
x. On July 7, 2014 a CTC was issued for the replacement of existing sewage settling tanks with a new sewage settling tank and 24 Hour Flow Equalization.

APPENDIX A

DESCRIPTION OF WASTEWATERS AND TREATMENT FACILITIES

I. Description of Facility:
VPGC slaughters and further processes turkeys.

II. Operations Contributing Wastewater:
Poultry processing wastewater and sanitary wastewater are generated within the poultry processing facility. Stormwater exposed to industrial activity is collected and commingled with process wastewater prior to treatment in the industrial WWTP serving Outfall 102. Sanitary wastewater is treated separately from the commingled industrial wastewater and is discharged through the STP serving Outfall 101 (see discussion below).

III. Description of Outfalls:

A. Internal Outfall 101 (STP):

The STP consists of the following units: (3) 1,500 gallon settling tanks, extended aeration activated sludge, secondary clarification, aerobic sludge digestion, and UV disinfection. There is currently no flow measurement at outfall 101. The flow is estimated once per month.

Design flow: 0.02 MGD

B. Internal Outfall 102 (Industrial WWTP):

Internal Outfall 102 for the final discharge from the industrial WWTP will be a new sampling location in the 2014 permit. The primary purpose of establishing a sampling location at Internal Outfall 102 is for determining compliance with the technology-based TP limit.

The Industrial WWTP consists of the following units: screening, acid and polymer chemical addition, coagulation, flocculation, dissolved air flotation unit #1, pH adjustment, (3) anoxic treatment basins, complete mix activated sludge, secondary clarification, alum and polymer addition, dissolved air flotation unit #2, Upflow Sand Filtration, UV disinfection, and continuous flow monitoring.

Design flow: 1.5 MGD
Permitted Flow Tier: 1.08 MGD

C. Outfall 001 (combined discharge from Outfalls 101 and 102):

1. Outfall 001 sampling location – The 2009 Fact Sheet described the Outfall 001 sampling point as the combined flow from the industrial WWTP and the sanitary WWTP. The sampling locations for Outfall 001, 101, and 102 are in a sampling pit. A diagram of the sampling pit is contained in the site visit memo contained in Appendix B.

2. Rationale for Changes in Flows Used for Permit Limit Evaluation at Outfall 001 – There have been several changes of ownership for this facility and numerous plant changes and upgrades over the years. At one time the final discharge from the industrial WWTP and sanitary WWTP were disinfected together prior to discharge through Outfall 001. Later, separate disinfection was established for the industrial WWTP and sanitary STP. The permit applications submitted stated that the design flow for Outfall 001 was 1.5 MGD so it was assumed that the design flow took into account the sanitary WWTP as well. During this time, WLAs were under development for tributary strategies and TMDLs. Many of these WLAs were based on Outfall 001 flows of 1.5 MGD and 1.1 MGD and were assumed to include both the sanitary and industrial components of Outfall 001.

2014 Permit Limit Evaluation Approach for Outfall 001:

Limit Evaluation Based on 1.52 MGD – The design flow of the industrial WWTP is 1.5 MGD. The design flow of the sanitary WWTP is 0.020 MGD. Permit limits for Outfall 001 were evaluated based on a combination of the design flows for the industrial WWTP and sanitary STP; 1.5 MGD + 0.020 MGD = 1.52 MGD.

Limit Evaluation Based on 1.10 MGD – The permittee requested that permit limits for Outfall 001 be evaluated based on a permitted flow tier of 1.10 MGD; therefore, permit limits for Outfall 001 were also evaluated based on a combination of the permitted flow for the industrial WWTP and design flow for the sanitary STP; 1.08 MGD + 0.020 MGD = 1.10 MGD.

3. Outfall 001 Flow Calculation - The industrial WWTP (Outfall 102) has continuous flow monitoring. The sanitary STP (Outfall 101) does not have flow measurement. There is no flow measurement at the combined Outfall 001; therefore, the flow for Outfall 001 is calculated based on adding the flows from Outfalls 101 and 102. The permittee submits the flow data for Outfall 101, 102, and 001 on the logs submitted with the monthly DMRs.

   Average Flow (June 2012 – November 2013): 0.795 MGD
   Daily Maximum Flow (June 2012 – November 2013): 1.290 MGD

D. Outfall 002:

Outfall 002 consists of reservoir overflow and stormwater not exposed to industrial activity and discharges to a ditch draining to War Branch. The raw water used at VPGC comes from a well and from the City of Harrisonburg. The well water is pumped to a reservoir and is then used in the plant. Reservoir overflow occurs when the well overflows on Saturdays and Sundays when the plant may not be processing.

E. Outfall 003:

Outfall 003 is stormwater runoff that discharges to Muddy Creek. Normally, stormwater from this drainage area is routed through the industrial WWTP; therefore Outfall 003 normally has no discharge unless there is an Unreasonable Storm Event. In an Unreasonable Storm Event, stormwater from the loading dock is discharged through Outfall 003.

F. Outfall 004:

Outfall 004 is a new stormwater outfall in the 2014 permit. This outfall is considered exposed to industrial activity since there is scrap metal stored in this area. Stormwater from this area is not collected and is not sent to the industrial WWTP.

G. Outfall 005

Outfall 005 is a new stormwater outfall in the 2014 permit. Stormwater not exposed to industrial activity is discharged and this stormwater is not collected and is not sent to the WWTP.

IV. Description of Stormwater Management/Treatment:

During a reasonable storm event, stormwater drainage from Outfall 001 and 003 is directed to a Collection Pit located at the Stormwater Pump Station. Stormwater is pumped to Stormwater Basin 1 (50,000 gallons) that overflows to Stormwater Basin 2 (150,000 gallons) to an aerated Flow Equalization Basin (250,000 gallons). The FEB is also used to receive Chiller wastewater.

The stormwater/wastewater is pumped from the FEB to the industrial WWTP and is ultimately discharged through Outfall 001 to Muddy Creek.

Outfall	Drainage Area	Description
001	231,933 sq. ft.	Located in the center portion of the property and includes the truck shop, live shed, trailer wash, live receiving, offal, boiler room, wastewater pretreatment
002	381,267 sq. ft.	Stormwater runoff from employee parking lot
003	47,692 sq. ft.	Located to the east of the processing plant and includes the shipping dock and refrigeration.
004 (new)	123,275 sq. ft.	Located in the clean trailer parking gravel area along the back portion of the property adjacent to War Branch upstream of Outfall 002. Part of the industrial WWTP is located in this area. Stormwater flows through a drainage swale prior to discharge into War Branch. The permittee plans to install rip rap and hay bales in the area to prevent further erosion and trap solids.
005 (new)	NA	A grassy area along the west property line. This area receives stormwater not exposed to industrial activity.

Two separate situations must be considered when addressing stormwater at this facility. The permit application describes the situations as "reasonable storm events" and "unreasonable storm events". The only description of an unreasonable storm event that is provided is that it would be a large rain in a short period of time.

Reasonable Storm Event

During a reasonable storm event, stormwater from the Outfall 003 drainage area flows into a Drop Inlet located near Outfall 003 and flows to a Collection Tank near the Shipping Dock. From there stormwater is pumped to the Collection Pit located at the Stormwater Pump Station. Stormwater drainage from Outfall 001 is also directed to the Collection Pit. From there, the stormwater is combined with the process wastewater, and treated before being discharged through Outfall 001. During a reasonable storm event, Outfall 002 only receives stormwater from an employee parking lot at the facility.

Unreasonable Storm Event

During an unreasonable storm event, the stormwater from the 231,933 sq. ft. area that is indicated for Outfall 001 will overflow the Collection Pit located at the Stormwater Pump Station and flow towards Outfall 002 where it will combine with the parking lot run off before discharging through Outfall 002. The applicant has indicated that the stormwater from the 231,933 sq. ft. area that is indicated for Outfall 001 has overflowed and discharged through Outfall 002 once or twice in the past five years resulting from a rainfall of four inches or more in a short period of time.

During an unreasonable storm event, a valve in a Collection Tank near the Shipping Dock is opened allowing the stormwater from the shipping dock area to discharge through Outfall 003. The applicant has indicated that Outfall 003 has discharged once or twice in the past five years resulting from a rainfall of four inches or more in a short period of time.

VPDES Permit Rating Work Sheet

Facilities identified under SIC Code 2015 have the following characteristics as defined in Appendix A to the NPDES Permit Rating Work Sheet found in the VPDES Permit Manual.

1987 SIC Code	1987 SIC Code Title	40 CFR 432 Sub-Part	Sub-part Title	Human Health Toxicity Number	Total Toxicity Number	Industrial Sub-category Number
2015	Poultry Slaughtering and Processing	NR	K	1	1	4

Factor 1 – Toxic Pollutant Potential
The facility has process waste streams. Toxicity Group Code is 1.

Factor 2 – Flow/Stream Flow Volume
Section B is selected because it is possible to predict an instream concentration mix at critical stream flows. Type II is selected. Type II wastewaters with flows with an IWC ≥50% correspond to code 53.

Factor 3. – Conventional Pollutants
The permit contains limits for: A. Oxygen Demanding Pollutants; B. Total Suspended Solids; and C. Nitrogen Pollutants.

Factor 4. – Public Health Impact
Using a worst case evaluation, it is assumed that there is a public drinking water supply within 50 miles downstream of the facility.

Factor 5.A. – The facility is subject to water quality based effluent limits.

Factor 5.B. – The receiving water is in compliance with applicable WQS for pollutants that are water quality limited in the permit.

Factor 5.C. – The permit contains Toxics Management Program requirements.

Factor 6. – Proximity to Near Coastal Waters: Headquarters Priority Permit Indicator (HPRI) Code #4 – This discharge occurs in a non-coastal county.

NPDES PERMIT RATING WORK SHEET

X Regular Addition
☐ DiscretionaryAddition
☐ Score change, but no status change
☐ Deletion

NPDES NO. **VA0002313**

Facility Name: **VPGC, LLC**

City: **Hinton, VA**

Receiving Water: **Muddy Creek and War Branch**

Reach Number: _____

Is this facility a steam electric power plant (SIC=4911) with one or more of the following characteristics?
1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rate

☐ YES; score is 600 (stop here) ☑ NO (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

☐ YES; score is 700 (stop here)
☑ NO (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: _____ Primary SIC Code: 2015 Other SIC Codes: ____

Industrial Subcategory Code: 000 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
[ ] No process waste streams			[ ] 3.	3	15	[ ] 7.	7	35
[X] 1.	1	5	[ ] 4.	4	20	[ ] 8.	8	40
[ ] 2.	2	10	[ ] 5.	5	25	[ ] 9.	9	45
			[ ] 6.	6	30	[ ] 10.	10	50

Code Number Checked : 1

Total Points Factor 1: 5

FACTOR 2: Flow/Stream Flow Volume (*Complete either Section A or Section B; check only one)*

Section A ☐ Wastewater Flow Only Considered

Wastewater Type (See Instructions)		Code	Points
Type I: Flow < 5 MGD	☐	11	0
Flow 5 to 10 MGD	☐	12	10
Flow > 10 to 50 MGD	☐	13	20
Flow > 50 MGD	☐	14	30
Type II: Flow < 1 MGD	☐	21	10
Flow 1 to 5 MGD	☐	22	20
Flow > 5 to 10 MGD	☐	23	30
Flow > 10 MGD	☐	24	50
Type III: Flow < 1 MGD	☐	31	0
Flow 1 to 5 MGD	☐	32	10
Flow > 5 to 10 MGD	☐	33	20
Flow > 10 MGD	☐	34	30

Section B X Wastewater and Stream Flow Considered

Wastewater Type (See Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10 %	☐	41	0
	10 % to < 50 %	☐	42	10
	> 50 %	☐	43	20
Type II:	< 10 %	☐	51	0
	10 % to <50 %	☐	52	20
	> 50 %	X	53	30

Code Checked from Section A or B: 53

Total Points Factor 2: 30

FACTOR 3: Conventional Pollutants

(only when limited by the permit)

A. Oxygen Demanding Pollutant: (check one) ☐ BOD ☐ COD ☐ Other:_____

			Code	*Points*
Permit Limits: (check one)	☐	< 100 lbs/day	1	0
	X	100 to 1000 lbs/day	2	5
	☐	> 1000 to 3000 lbs/day	3	15
	☐	> 3000 lbs/day	4	20

Code Checked: 2

Points Scored: 5

B. Total Suspended Solids (TSS)

			Code	*Points*
Permit Limits: (check one)	☐	< 100 lbs/day	1	0
	X	100 to 1000 lbs/day	2	5
	☐	> 1000 to 5000 lbs/day	3	15
	☐	> 5000 lbs/day	4	20

Code Checked: 2

Points Scored: 5

C. Nitrogen Pollutant: (check one) ☐ Ammonia ☐ Other: _____

		Nitrogen Equivalent	*Code*	*Points*
Permit Limits: (check one)	☐	< 300 lbs/day	1	0
	X	300 to 1000 lbs/day	2	5
	☐	> 1000 to 3000 lbs/day	3	15
	☐	> 3000 lbs/day	4	20

Code Checked: 2

Points Scored: 5

Total Points Factor 3: 15

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this includes any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above referenced supply.

X YES (If yes, check toxicity potential number below)

☐ NO (If no, go to Factor 5)

Determine the *human health* toxicity potential from Appendix A. Use the same SIC code and subcategory reference as in Factor 1. (Be sure to use the human health toxicity group column ☐ check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☐ 3.	3	0	☐ 7.	7	15
X 1.	1	0	☐ 4.	4	0	☐ 8.	8	20
☐ 2.	2	0	☐ 5.	5	5	☐ 9.	9	25
			☐ 6.	6	10	☐ 10.	10	30

Code Number Checked: 1

Total Points Factor 4: 0

FACTOR 5: Water Quality Factors

A. Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-based federal effluent guidelines, or technology-based state effluent guidelines), or has a wasteload allocation been assigned to the discharge:

		Code	Points
X	Yes	1	10
☐	No	2	0

B. Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?

		Code	Points
X	Yes	1	0
☐	No	2	5

C. Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?

		Code	Points
X	Yes	1	10
☐	No	2	0

Code Number Checked: A 1 B 1 C 1

Points Factor 5: A 10 + B 0 + C 10 = 20 TOTAL

FACTOR 6: Proximity to Near Coastal Waters

A. Base Score: Enter flow code here (from Factor 2): _43_

Enter the multiplication factor that corresponds to the flow code: _0.10_

Check appropriate facility HPRI Code (from PCS):

	HPRI#	*Code*	*HPRI Score*
☐	1	1	20
☐	2	2	0
☐	3	3	30
X	4	4	0
☐	5	5	20

HPRI code checked: 4

Flow Code	*Multiplication Factor*
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

Base Score: (HPRI Score) 0 X (Multiplication Factor) 0.1 = 0 (TOTAL POINTS)

B. Additional Points ☐ NEP Program
For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

N/A

		Code	Points
☐	Yes	1	10
☐	No	2	0

C. Additional Points ☐ Great Lakes Area of Concern
For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 areas of concern (see Instructions)

N/A

		Code	Points
☐	Yes	1	10
☐	No	2	0

Code Number Checked: A 4 B N/A C N/A -

Points Factor 6: A 0 + B NA + C NA = 0 TOTAL

SCORE SUMMARY

Factor	Description	Total Points
1	Toxic Pollutant Potential	5
2	Flows/Streamflow Volume	30
3	Conventional Pollutants	15
4	Public Health Impacts	0
5	Water Quality Factors	20
6	Proximity to Near Coastal Waters	0
	TOTAL (Factors 1 through 6)	70

S1. Is the total score equal to or greater than 80? ☐ Yes (Facility is a major) X No

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

X No

☐ Yes (Add 500 points to the above score and provide reason below:

Reason:

NEW SCORE: 70

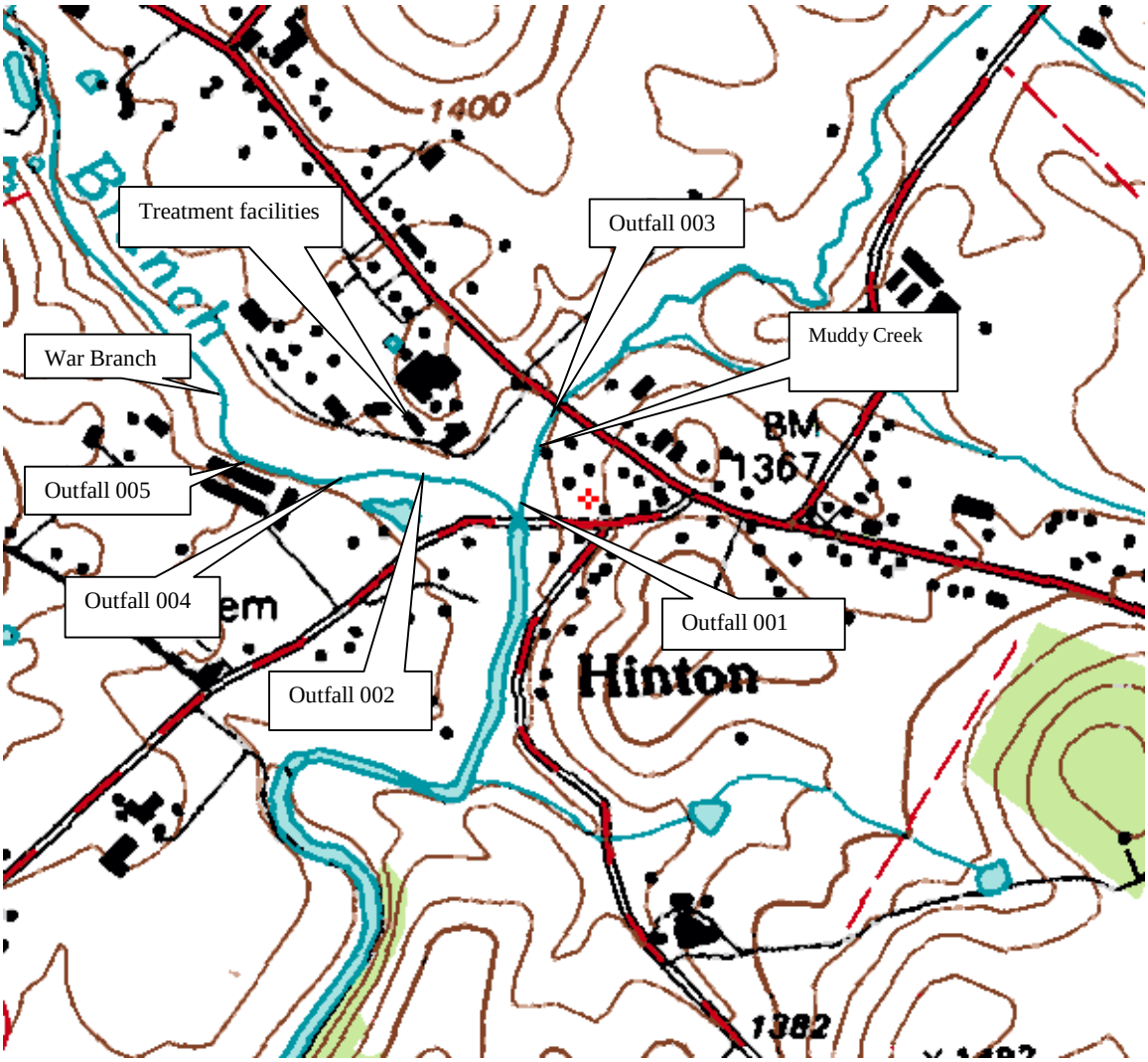
OLD SCORE: unavailable

Bev Carver
Permit Writer's Name
540-574-7805
Phone Number
02.12.14
Date

APPENDIX B

DISCHARGE LOCATION AND RECEIVING WATERS INFORMATION

The location of the treatment facilities and outfalls are shown on the topographic map below. Outfall 001 (final discharge from WWTP) discharges to Muddy Creek just prior to the confluence with War Branch. Outfall 003 discharges to Muddy Creek at the Route 33 bridge upstream of Outfall 001. Outfalls 002, 004, and 005 discharge to War Branch.



PLANNING INFORMATION

Relevant points of interest within the watershed and in the vicinity of the discharge are shown on the Water Quality Assessments Review table and corresponding map below.

WATER QUALITY ASSESSMENTS REVIEW
POTOMAC-SHENANDOAH RIVER BASIN
8/19/2014

IMPAIRED SEGMENTS

SEGMENT ID	STREAM	SEGMENT START	SEGMENT END	SEGMENT LENGTH	PARAMETER	
B21R-01-BAC	Dry River	6.32	0.00	6.32	E-coli, Fecal Coliform	
B22R-01-BAC	Muddy Creek	10.31	0.00	10.31	E-coli, Fecal Coliform	
B22R-01-BEN	Muddy Creek	10.31	0.00	10.31	Benthic	

PERMITS

PERMIT	FACILITY	STREAM	RIVER MILE	LAT	LONG	WBID
VA0002313	**VPGC, LLC-001**	**Muddy Creek**	**3.70**	**382757**	**0785834**	**VAV-B22R**
VA0002313	**VPGC, LLC-002**	**War Branch**	**0.147**	**382756**	**0785841**	**VAV-B22R**
VA0002313	**VPGC, LLC-003**	**Muddy Creek**	**3.67**	**382756**	**0785834**	**VAV-B22R**
VA0002313	**VPGC, LLC-004**	**War Branch**	**0.175**	**382800**	**0785843**	**VAV-B22R**
VA0002313	**VPGC, LLC-005**	**War Branch**	**0.212**	**382800**	**0785845**	**VAV-B22R**

MONITORING STATIONS

STREAM	NAME	RIVER MILE	RECORD	LAT	LONG	
Buttermilk Run	1BBTT000.84	0.84		382840	0785956	
Dry River	1BDUR004.32	4.32	12/1/99	382648	0785936	
Dry River	1BDUR006.46	6.46	6/28/00	382806	0790038	
Muddy Creek	1BMDD001.65	1.65	3/2/70	382649	0785903	
Muddy Creek	1BMDD003.74	3.74	8/12/96	382801	0785832	
Muddy Creek	1BMDD005.15	5.15	9/23/99	382852	0785808	
War Branch	1BWRB000.06	0.06		382759	0785836	
War Branch	1BWRB001.93	1.93		382915	0785923	
Muddy Creek	1BMDD005.17	5.17	11/2/10	382852	0785845	
Muddy Creek	1BMDD005.81	5.81	09/03/93	382912	0785738	
Muddy Creek	1BMDD002.10	2.10	10/01/96	382706	0785913	

PUBLIC WATER SUPPLY INTAKES

OWNER	STREAM	RIVER MILE				
None						

WATER QUALITY MANAGEMENT PLANNING REGULATION

Is this discharge addressed in the WQMP regulation? **Yes**

If Yes, what effluent limitations or restrictions does the WQMP regulation impose on this discharge?

PARAMETER	ALLOCATION					
Nutrients Under the Watershed General Permit						

WATERSHED NAME

VAV-B22R Muddy Creek

FLOW FREQUENCY DETERMINATION

VPGC, LLC - Hinton discharges to Muddy Creek just downstream of the confluence with War Branch. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit reissuance.

The USGS and VADEQ have operated a continuous record gage on Muddy Creek at Mount Clinton, VA (#01621050) from 1993 to present. This gage is located approximately 2.1 miles upstream of the discharge point. The flow frequencies at the Outfall 001 discharge point were determined by using the values at the gage and adjusting them by proportional drainage areas. The data for the gage and the discharge point are presented below.

Muddy Creek at Mount Clinton, VA (#01621050):

Drainage Area = 14.3 mi^2

1Q30	=	0.22 cfs	High Flow 1Q10	=	unavailable
1Q10	=	0.35 cfs	High Flow 7Q10	=	unavailable
7Q10	=	0.41 cfs	High Flow 30Q10	=	unavailable
30Q10	=	0.58 cfs	Harmonic Mean	=	2.8 cfs
30Q5	=	0.82 cfs			

Because the high flow months are not contiguous, calculation of the flow frequencies for the high flow months was not possible.

Muddy Creek at VPGC, LLC – Hinton Outfall 001 discharge point:

Drainage Area = 28.9 mi^2

1Q30	=	0.445 cfs	0.287 MGD	High Flow 1Q10	=	NA	NA
1Q10	=	0.707 cfs	0.457 MGD	High Flow 7Q10	=	NA	NA
7Q10	=	0.829 cfs	0.536 MGD	High Flow 30Q10	=	NA	NA
30Q10	=	1.17 cfs	0.758 MGD	Harmonic Mean	=	5.66 cfs	3.66 MGD
30Q5	=	1.66 cfs	1.07 MGD				

The analysis assumes that (a) there are no significant discharges, withdrawals, or springs that may influence the flow in Muddy Creek or War Branch upstream of the discharge point and (b) there are no significant discharges, withdrawals or springs between the gage and the discharge point.

Flow Values for Dry River

7Q10 flows for Dry River at the confluence with Muddy Creek were needed in order to determine effluent limits using the Regional Stream Model (see Appendix C for discussion of model).

DEQ staff observed no stream flow in Dry River prior to the confluence with Muddy Creek during the summer months; therefore, the 7Q10 for Dry River was set at 0 MGD in the Regional Stream Model.

Flow Values for North River

7Q10 flows for North River at the confluence with Dry River were needed in order to determine effluent limits using the Regional Stream Model (see Appendix C for discussion of model).

The 7Q10 flow for North River at the confluence with Dry River was calculated by performing a drainage area comparison with the 7Q10 flow calculated for North River WWTF (VA0060640) using the following information:

- 7Q10 flow for North River WWTF (VA0060640) = 13.1 MGD
- Average Effluent Flow for North River WWTF = 11.7 MGD
- Drainage Area at North River WWTF Outfall 001 Discharge Point = 370.11 square miles
- Drainage Area at confluence of Dry River and North River = 293.42 square miles (refer to segment 5 of Regional Model)

Refer to the Flow Frequency Determination memo dated July 5, 2013 for the 7Q10 for the North River WWTF (VA0060640).

The 7Q10 for the North River at the confluence with the Dry River was determined to be 6.71 MGD.

Peer Reviewer: Keith Showman
Date:7/5/13

EFFLUENT/STREAM MIXING EVALUATION

Mixing zone predictions were made with the Virginia DEQ Mixing Zone Analysis Version 2.1 program. The predictions are based on the discharge and receiving stream characteristics, and are presented below.

1.10 MGD Flow Tier	1.52 MGD Flow Tier
Stream 7Q10 = 0.536 MGD Stream 30Q10 = 0.758 MGD Stream 1Q10 = 0.457 MGD Stream slope = 0.002 ft/ft Stream width = 17 ft Bottom scale = 2 Channel scale = 1 Mixing Zone Predictions @ 7Q10 Depth = .362 ft Length = 860.55 ft Velocity = .4115 ft/sec Residence Time = .0242 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used. Mixing Zone Predictions @ 30Q10 Depth = .3912 ft Length = 804.94 ft Velocity = .4324 ft/sec Residence Time = .0215 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used. Mixing Zone Predictions @ 1Q10 Depth = .3512 ft Length = 883.29 ft Velocity = .4036 ft/sec Residence Time = .6079 hours Recommendation: A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used. Virginia DEQ Mixing Zone Analysis Version 2.1	Stream 7Q10 = 0.536 MGD Stream 30Q10 = 0.758 MGD Stream 1Q10 = 0.457 MGD Stream slope = 0.002 ft/ft Stream width = 17 ft Bottom scale = 2 Channel scale = 1 Mixing Zone Predictions @ 7Q10 Depth = .4162 ft Length = 762.96 ft Velocity = .4498 ft/sec Residence Time = .0196 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used. Mixing Zone Predictions @ 30Q10 Depth = .4429 ft Length = 723.4 ft Velocity = .468 ft/sec Residence Time = .0179 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used. Mixing Zone Predictions @ 1Q10 Depth = .4063 ft Length = 779.13 ft Velocity = .443 ft/sec Residence Time = .4886 hours Recommendation: A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used. Virginia DEQ Mixing Zone Analysis Version 2.1

MEMORANDUM
DEPARTMENT OF ENVIRONMENTAL QUALITY
VALLEY REGIONAL OFFICE

4411 Early Road – P.O. Box 3000 Harrisonburg, VA 22801

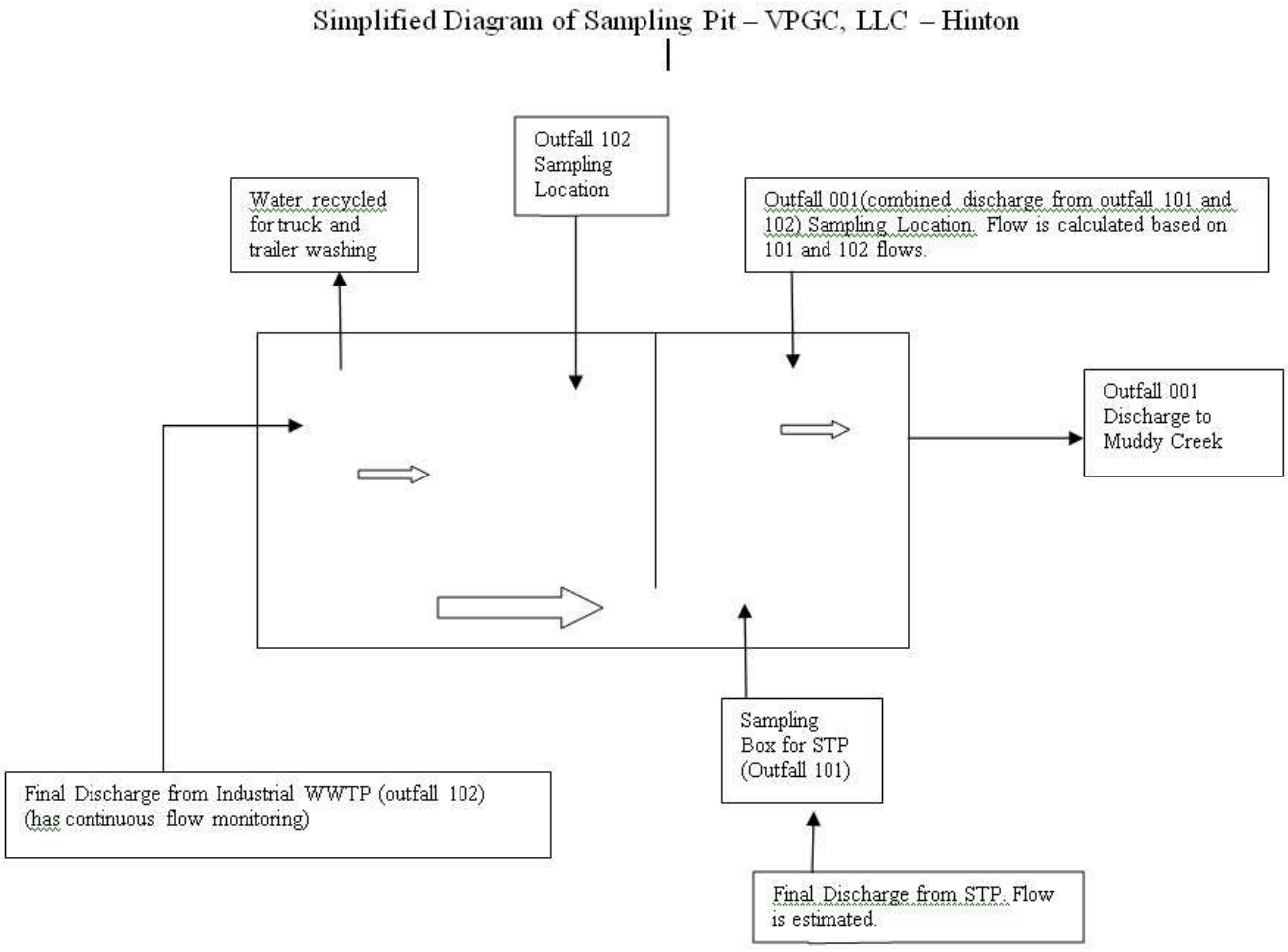
SUBJECT: Site Visit for Reissuance of VPDES Permit No. VA0002313, VPGC, LLC
Rockingham County

TO: Permit Processing File

FROM: Bev Carver

DATE: February 24. 2014

On February 21, 2014, the writer performed a site visit at the subject facility. Brandon Kiracofe, Water Permits and Compliance Manager, DEQ, Ron Harrison, Environmental Manager, VPGC, LLC and Phil Miller, Engineering Manager, VPGC, LLC were also present. In the 2014 permit, a new sampling location for the final discharge from the industrial WWTP (Outfall 102) will be established. One of the goals of the site visit was to look at the sampling pit and gain an understanding of where the sampling points will be. Below is a diagram of the sampling pit.



Outfall 002 to War Branch

Looking upstream on War Branch just prior to confluence with Muddy Creek

Confluence of Muddy Creek and War Branch

Outfall 001 (black pipe) to Muddy Creek. Silver pipe is unused.

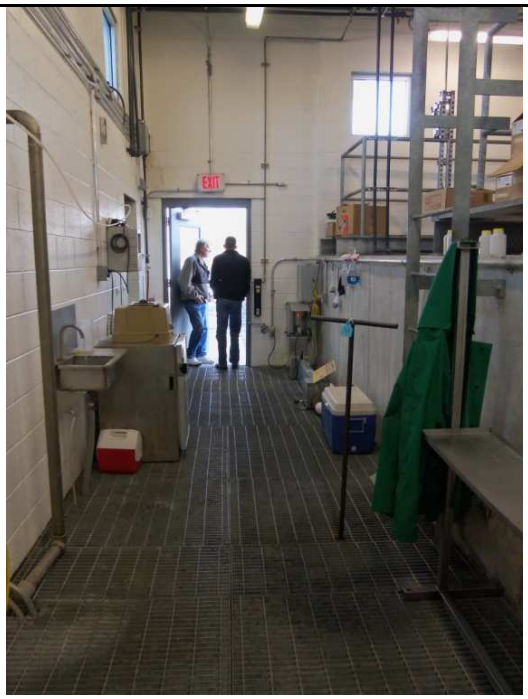
Looking upstream of Outfall 001(black pipe)

Downstream of Outfall 001

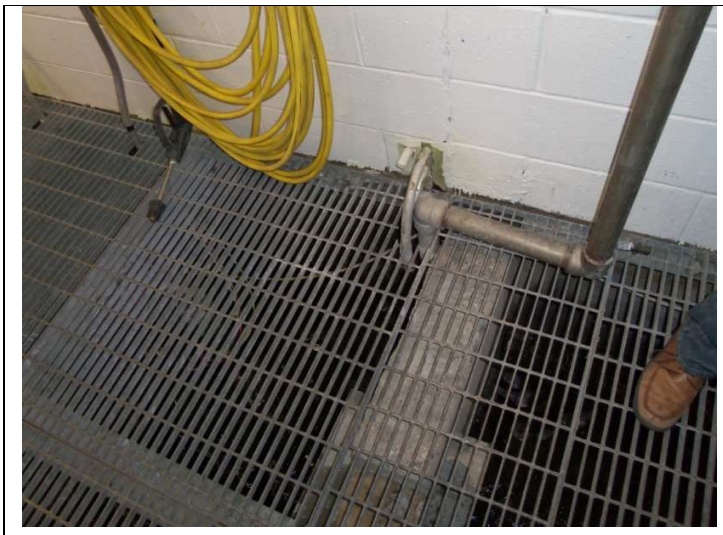
Outfall 003 discharge to Muddy Creek

Outfall 101(STP) sampling location

Outfall 001 sampling location (combined discharges from Outfalls 102 and 101). Note which side of wall sampling hose is on. The location for the new Outfall 102 (final discharge from industrial WWTP) will be on the other side of the wall where the ISCO sampler is.



View of sampling pit. Monitoring locations for Outfall 001, 101, and 102 are located at this sampling pit.

	
Location where final wastewater discharge from outfall 102 is recycled for truck washing.	Final discharge from industrial WWTP (Outfall 102). This trough empties into the sampling pit.

MEMORANDUM
DEPARTMENT OF ENVIRONMENTAL QUALITY
VALLEY REGIONAL OFFICE

4411 Early Road – P.O. Box 3000 Harrisonburg, VA 22801

SUBJECT: Site Visit for Reissuance of VPDES Permit No. VA0002313, VPGC, LLC Rockingham County

TO: Permit Processing File

FROM: Bev Carver

DATE: August 12. 2014

On August 11, 2014, the writer performed a site visit at the subject facility. Noel Thomas, Water Permit Inspector DEQ and Ron Harrison, Environmental Manager, VPGC, LLC were also present. The purpose of the inspection was to inspect two new stormwater outfalls (Outfall 004 and Outfall 005) identified in the Environmental Plan submitted May 29, 2014 with the permit application.

Clean Trailer Parking Lot drains to Outfall 004

Scrap Metal storage near Outfall 004

Industrial WWTP tanks near Outfall 004

Industrial WWTP material near Outfall 004

Drainage Swale to Outfall 004

Grassy area drains to 004 drainage swale

Piles of rip rap planned to prevent further erosion of Outfall 004 drainage swale

Outfall 004 sampling point

Stormwater runoff eroded soil under tree next to War Branch where Outfall 004 discharge enters

Clean trailer parking area draining to Outfall 005.

Inlet for stormwater runoff to Outfall 005.

Outfall 005 runoff to grassy swale going to War Branch

APPENDIX C

EFFLUENT SCREENING AND EFFLUENT LIMITATIONS

EFFLUENT LIMITATIONS:

A comparison of technology and water quality-based limits was performed and the most stringent limits were selected, as summarized in the tables below.

Outfall 001 **Final Limits** **1.10 MGD Permitted Flow Tier**

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average		Maximum		Frequency	Sample Type
Flow (MGD)	1	NL		NL		1/Month	Calculated
BOD_5	2,4	16 mg/L	67 kg/d	26 mg/L	110 kg/d	2/Month	24 HC
TSS	7,8	19 mg/L	79 kg/d	30 mg/L	120 kg/d	1/Month	24 HC
Total Nitrogen	5	103 mg/L	430 kg/d	147 mg/L	610 kg/d	2/Month	Calculated
TKN (as N)	3,4	6.9 mg/L	29 kg/d	14 mg/L	58 kg/d	1/Week	24 HC
Nitrate (as N)	6	15 mg/L	61 kg/d	30 mg/L	120 kg/d	2/Month	24 HC
---	---	Minimum		Maximum		---	---
pH (S.U.)	2,3	6.5		9.0		1/Day	Grab
Dissolved Oxygen (mg/L)	3,4	6.0		NA		1/Day	Grab
WET Chronic NOEC *P. promelas*	3	NA		2.17 TU_c		1/Year	24 HC
WET Chronic NOEC *C. dubia*	3	NA		2.17 TU_c		1/3 Months	24 HC

NL = No Limitation, monitoring required *24 HC = 24-Hour Composite* *NA = Not Applicable*
2/Month = 2 samples taken during the calendar month, no less than 7 days apart
1/3 Months = Sampling each calendar quarter with the results submitted with the DMR due January 10th, April 10th, July 10th and October 10th of each year
1/Year = Annual sampling with the results submitted with the DMR due January 10th of each year

BASIS DESCRIPTIONS

1. *VPDES Permit Regulation (9VAC25-31)*
2. *Federal Effluent Requirements (Meat and Poultry Products – 40 CFR432 – Subpart K - BPT)*
3. *Water Quality Standards (9VAC25-260)*
4. *Regional Stream Model simulation*
5. *Best Professional Judgment (BPJ)*
6. *TMDL for Muddy Creek/Dry River*
7. *Chesapeake Bay TMDL*
8. *Antibacksliding*

Outfall 001 **Final Limits** **1.52 MGD Design Flow Tier**

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average		Maximum		Frequency	Sample Type
Flow (MGD)	1	NL		NL		1/Month	Calculated
BOD_5	2,4	14 mg/L	80 kg/d	26 mg/L	150 kg/d	2/Month	24 HC
TSS	7	14 mg/L	80 kg/d	28 mg/L	160 kg/d	1/Month	24 HC
Total Nitrogen	5	103 mg/L	590 kg/d	147 mg/L	840 kg/d	2/Month	Calculated
TKN (as N)	3,4	6.9 mg/L	40 kg/d	14 mg/L	80 kg/d	1/Week	24 HC
Nitrate (as N)	6	11 mg/L	61 kg/d	22 mg/L	130 kg/d	2/Month	24 HC
---	---	Minimum		Maximum		---	---
pH (S.U.)	2,3	6.5		9.0		1/Day	Grab
Dissolved Oxygen (mg/L)	3,4	6.0		NA		1/Day	Grab
WET Chronic NOEC *P. promelas*	3	NA		1.96 TU_c		1/Year	24 HC
WET Chronic NOEC *C. dubia*	3	NA		1.96 TU_c		1/ 3 Months	24 HC

NL = No Limitation, monitoring required *24 HC = 24-Hour Composite* *NA = Not Applicable*
2/Month = 2 samples taken during the calendar month, no less than 7 days apart
1/3 Months = Sampling each calendar quarter with the results submitted with the DMR due January 10th, April 10th, July 10th and October 10th of each year
1/Year = Annual sampling with the results submitted with the DMR due January 10th of each year

BASIS DESCRIPTIONS
1. *VPDES Permit Regulation (9VAC25-31)*
2. *Federal Effluent Requirements (Meat and Poultry Products – 40 CFR432 – Subpart K - BPT)*
3. *Water Quality Standards (9VAC25-260)*
4. *Regional Stream Model simulation*
5. *Best Professional Judgment (BPJ)*
6. *TMDL for Muddy Creek/Dry River*
7. *Chesapeake Bay TMDL*

Outfall 101 (Sewage Treatment Plant) **Final Limits** **STP Design Flow: 0.020 MGD**

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average		Maximum		Frequency	Sample Type
Flow (MGD)	1	NL		NL		1/Month	Estimate
---	---	Monthly Average		Weekly Avg.		---	---
BOD_5	2	30 mg/L	2.3 kg/d	45 mg/L	3.4 kg/d	1/Month	Grab
TSS	2	30 mg/L	2.3 kg/d	45 mg/L	3.4 kg/d	1/Month	Grab
E. coli (N/100 mL) (geometric mean)	3	126		NA		4/Month 10 a.m. – 4 p.m.	Grab
---	---	Minimum		Maximum		---	---
pH (SU)	2	6.0		9.0		1/Year	Grab

NL = No Limitation, monitoring required *NA = Not Applicable*
1/Year = Annual sampling with the results submitted with the DMR due January 10th of each year
4/Month = 4 samples taken monthly, with at least 1 sample taken each calendar week

BASIS DESCRIPTIONS
1. *VPDES Permit Regulation (9VAC25-31)*
2. *Federal Effluent Requirements (Secondary Treatment Regulation - 40CFR133)*
3. *Water Quality Standards (9VAC25-260)*

Outfall 102 (Industrial WWTP) **Final Limits** **1.08 MGD Permitted Flow Tier**

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average		Maximum		Frequency	Sample Type
Flow (MGD)	1	NL		NL		Continuous	TIRE
---	---	Monthly Average		Daily Maximum		---	---
Oil and Grease	4	8.0 mg/L	33 kg/d	14 mg/L	57 kg/d	1/Month	Grab
E. coli (N/100 mL) (geometric mean)	6,7	13		NA		3/Week 10 a.m. to 4 p.m.	Grab
Total Suspended Solids	4	20 mg/L	82 kg/d	30 mg/L	120 kg/d	1/Year	24 HC
BOD_5	4	16 mg/L	65 kg/d	26 mg/L	110 kg/d	1/Year	24 HC
TKN (as N)(mg/L)	5	NL		NL		1/Year	24 HC
Nitrite-N + Nitrate-N (mg/L)	5	NL		NL		1/Year	24 HC
Total Nitrogen*	5	103 mg/L	420 kg/d	147 mg/L	600 kg/d	1/Year	Calculated
Ammonia-N (mg/L)	5	4.0		8.0		1/Year	24 HC
Total Phosphorus (mg/L)	2	NL		NA		2/Month	24 HC
---		Annual Average		Maximum		---	---
TP – Year to Date (mg/L)	3	NL		NA		1/Month	Calculated
TP – Calendar Year (mg/L)	2	1.85		NA		1/Year	Calculated
---	---	Minimum		Maximum		---	---
pH (SU)	4	6.0		9.0		1/Year	Grab
Fecal Coliform (N/100 mL)	4	NA		400		1/Year	Grab

NL = No Limitation, monitoring required *NA = Not Applicable*
TIRE = Totalizing, Indicating and Recording Equipment
** Total Nitrogen, which is the sum of TKN and Nitrite-N + Nitrate-N, shall be determined from the results of those tests*
1/Year = Annual sampling with the results submitted with the DMR due January 10th of each year
2/Month = 2 samples taken during the calendar month, no less than 7 days apart
3/Week = 3 samples taken during the calendar week, no less than 48 hours apart

BASIS DESCRIPTIONS

1. *VPDES Permit Regulation (9VAC25-31)*
2. *Annual average concentration limits are based on the Technology Regulation (9VAC25-40)*
3. *GM No. 07-2008, Amendment No. 2, 10/23/07, Permitting Considerations for Facilities in the Chesapeake Bay Watershed*
4. *Federal Effluent Requirements (Meat and Poultry Products – 40 CFR432 – Subpart K – BPT)*
5. *Federal Effluent Requirements (Meat and Poultry Products – 40CFR432 – Subpart K – BAT)*
6. *Water Quality Standards (9 VAC 25-260)*
7. *Bacteria TMDL for Muddy Creek/Dry Run*

Outfall 102 (Industrial WWTP) **Final Limits** **1.5 MGD Design Flow Tier**

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average		Maximum		Frequency	Sample Type
Flow (MGD)	1	NL		NL		Continuous	TIRE
---	---	Monthly Average		Daily Maximum		---	---
Oil and Grease	4	8.0 mg/L	45 kg/d	14 mg/L	79 kg/d	1/Month	Grab
E. coli (N/100 mL) (geometric mean)	6,7	9		NA		3/Week 10 a.m. – 4 p.m.	Grab
Total Suspended Solids	4	20 mg/L	110 kg/d	30 mg/L	170 kg/d	1/Year	24 HC
BOD_5	4	16 mg/L	91 kg/d	26 mg/L	150 kg/d	1/Year	24 HC
TKN (as N)(mg/L)	5	NL		NL		1/Year	24 HC
Nitrite-N + Nitrate-N (mg/L)	5	NL		NL		1/Year	24 HC
Total Nitrogen*	5	103 mg/L	580 kg/d	147 mg/L	830 kg/d	1/Year	Calculated
Ammonia-N (mg/L)	5	4.0		8.0		1/Year	24 HC
Total Phosphorus (mg/L)	2	NL		NA		2/Month	24 HC
---		Annual Average		Maximum		---	---
TP – Year to Date (mg/L)	3	NL		NA		1/Month	Calculated
TP – Calendar Year (mg/L)	2	1.85		NA		1/Year	Calculated
---	---	Minimum		Maximum		---	---
pH (SU)	4	6.0		9.0		1/Year	Grab
Fecal Coliform (N/100 mL)	4	NA		400		1/Year	Grab

NL = No Limitation, monitoring required *NA = Not Applicable*
TIRE = Totalizing, Indicating and Recording Equipment
** Total Nitrogen, which is the sum of TKN and Nitrite-N + Nitrate-N, shall be determined from the results of those tests*
1/Year = Annual sampling with the results submitted with the DMR due January 10th of each year
2/Month = 2 samples taken during the calendar month, no less than 7 days apart
3/Week = 3 samples taken during the calendar week, no less than 48 hours apart

BASIS DESCRIPTIONS

1. *VPDES Permit Regulation (9VAC25-31)*
2. *Annual average concentration limits are based on the Technology Regulation (9VAC25-40)*
3. *GM No. 07-2008, Amendment No. 2, 10/23/07, Permitting Considerations for Facilities in the Chesapeake Bay Watershed*
4. *Federal Effluent Requirements (Meat and Poultry Products – 40 CFR432 – Subpart K – BPT)*
5. *Federal Effluent Requirements (Meat and Poultry Products – 40 CFR432 – Subpart K – BAT)*
6. *Water Quality Standards (9 VAC 25-260)*
7. *Bacteria TMDL for Muddy Creek/Dry River*

Outfalls 002, 003, and 005

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
There shall be no discharge of process wastewater from these outfalls. Also, there shall be no discharge of floating solids or visible foam in other than trace amounts. No monitoring is required.					

Outfall 004 (stormwater associated with industrial activity)

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
Total Suspended Solids	1	NA	NL	1/6 Months	Grab
TKN	1	NA	NL	1/6 Months	Grab
Nitrite-N + Nitrate-N	1	NA	NL	1/6 Months	Grab
Total Phosphorus	1	NA	NL	1/6 Months	Grab
Total Nitrogen*	1	NA	NL	1/6 Months	Calculated

NL = No Limitation, monitoring required *NA = Not Applicable*

** Total Nitrogen, which is the sum of TKN and Nitrite-N + Nitrate-N, shall be determined from the results of those tests*

1/6 Months = Semiannual sampling (January 1 – June 30 and July 1 – December 31) with the results submitted with the DMR due January 10th and July 10th of each year until data from a minimum of four semiannual samples have been submitted

BASIS DESCRIPTIONS

1. *Guidance Memo No. 14-2011 dated August 8, 2014, Nutrient Monitoring for Nonsignificant Discharges to the Chesapeake Bay Watershed*

LIMITING FACTORS – OVERVIEW:
The following potential limiting factors have been considered in developing this permit and fact sheet:

Water Quality Management Plan Regulation (WQMP) (9VAC25-720)	
A. TMDL limits	Nitrate, Fecal Coliform, TSS
B. Non-TMDL WLAs	None
C. CBP (TN & TP) WLAs	TN, TP by coverage under VAN010009
Federal Effluent Guidelines – Meat and Poultry Products, 40 CFR Part 432 Subpart K	Ammonia-N, BOD_5, Fecal Coliform, Oil and Grease, TSS, TN, pH
Federal Effluent Guidelines – 40 CFR Part 133 Secondary Treatment for sanitary wastewater	BOD_5, TSS, pH
BPJ/Agency Guidance limits	None
Water Quality-based Limits - numeric	BOD_5, DO, Ammonia-N, E. coli, pH, TKN
Water Quality-based Limits - narrative	None
Technology Regulation (9VAC25-40-70)	TP concentration limits
Whole Effluent Toxicity (WET)	Chronic WET limits
Stormwater Limits	Nutrient monitoring was required at Outfall 004
Chesapeake Bay TMDL, Appendix Q	TN, TP, TSS

EVALUATION OF THE EFFLUENT – STORMWATER
As stated previously in Appendix A, all stormwater exposed to industrial activity for Outfalls 002 and 003 is collected and comingled with process wastewater prior to treatment and is discharged through Outfall 001. Because stormwater from Outfalls 002 and 003 is routed through the WWTP and handled under the process water WLA, compliance with the stormwater assumptions in the TMDL is not considered to be an issue for Outfalls 002 and 003; therefore, nutrient monitoring of the stormwater Outfalls 002 and 003 (which only discharge stormwater exposed to industrial activity under rare occasions) is not required.

Stormwater from Outfall 004 is considered exposed to industrial activity and is not collected and discharged through Outfall 001; therefore, stormwater monitoring at Outfall 004 is required.

Because stormwater from Outfall 005 is not considered exposed to industrial activity, no stormwater monitoring is required at this outfall.

EVALUATION OF THE EFFLUENT – FEDERAL EFFLUENT GUIDELINES FOR MEAT AND POULTRY

Because VPGC, LLC slaughters more than 100 million pounds per year (in units of Live Weight Killed), the facility is subject to the Federal Effluent Guideline (FEG) for Meat and Poultry Products – 40CFR432 – Subpart K which became effective on October 8, 2004. The following table shows the effluent limits attainable by the application of the best practical control technology available (BPT).

Regulated parameter	Monthly Average[1]	Daily Maximum[1]
Ammonia (as N)	4.0	8.0
BOD_5	16	26
Fecal Coliform	([3])	([2])
Oil & Grease	8.0	14
TSS	20	30

[1] mg/L (ppm).
[2] Maximum of 400 MPN or CFU per 100 mL at any time.
[3] No monthly average limitation.

The following table indicates the effluent limits attainable by the application of the best available technology economically achievable (BAT).

Regulated parameter	Monthly Average[1]	Daily Maximum[1]
Ammonia (as N)	4.0	8.0
Total Nitrogen	103	147

[1] mg/L (ppm).

The effluent limits attainable by the application of the best control technology for conventional pollutants (BCT) are the same as the BPT limitations for BOD_5, TSS, O&G (as HEM), and Fecal Coliform.

Because this facility is an existing direct discharger, it is subject to BPT, BAT, and BCT effluent limitations.

Any discharge subject to BPT, BCT, or NSPS limitations or standards in Part 432 must remain within the pH range of 6.0 to 9.0 SU.

These poultry effluent limitations guidelines apply to Outfall 102 for the industrial WWTP.

EVALUATION OF THE EFFLUENT – FEDERAL EFFLUENT GUIDELINES FOR SECONDARY TREATMENT: 40 CFR Part 133.102

- The 30-day average for BOD_5 and TSS shall not exceed 30 mg/L.
- The 7-day average for BOD_5 and TSS shall not exceed 45 mg/L.
- The pH must be in the range of 6.0 – 9.0 SU.

These secondary treatment limits apply to internal Outfall 101 for the sanitary WWTP.

BASIS FOR MODELED TKN

The monthly average Ammonia-N limit of 4.0 mg/L imposed in this permit is specified in the FEG (see Ammonia-N discussion later in this attachment) and apply at Outfall 102. The sewage treatment plant discharges through Outfall 101. Since Outfalls 101 and 102 are combined prior to discharge through Outfall 001, a mass balance was used to calculate the Ammonia-N limits at Outfall 001 as follows:

Given:

Outfall 101 (STP) Design Flow = 0.020 MGD
Outfall 102 (Industrial WWTP) Design Flow = 1.5 MGD
Total Flow (Outfall 001) = 1.52 MGD
Ammonia-N concentration at Outfall 101 = 9 mg/L (default value for STPs)
Ammonia-N concentration at Outfall 102 = 4.0 mg/L (monthly average ELG)

$$\frac{(1.5\ \text{MGD})(4.0\ \text{mg/L}) + (0.020\ \text{MGD})(9\ \text{mg/L})}{1.52\ \text{MGD}}$$

= 4.066 mg/L

Stats.exe was utilized to determine the chronic WLA that would result in the monthly average Ammonia-N limit of 4.066 mg/L at Outfall 001 at a monitoring frequency of 5/Week. That WLA was determined to be 3.9 mg/L. Based on the calculated WLA of 3.9 mg/L, the TKN in the model at both flow tiers was set at 3.9 + 3 = 6.9 mg/L.

EVALUATION OF THE EFFLUENT – BOD_5

A. Outfall 101 (Sanitary WWTP):
The design flow of the sanitary WWTP serving Outfall 101 is 0.020 MGD.
The BOD_5 limits at Outfall 101 are based on the Secondary Treatment Regulations and were calculated as follows:
Monthly Average: (30 mg/L)(0.020 MGD)(3.785) = 2.27 kg/d, round to 2.3 kg/d
Maximum Weekly Average: (45 mg/L)(0.020 MGD)(3.785) = 3.41 kg/d, round to 3.4 kg/d

B. Outfall 102 (Industrial WWTP):
The design flow of the industrial WWTP serving Outfall 102 is 1.5 MGD.
The permittee requested that the permit include a permitted flow tier of 1.08 MGD for Outfall 102.
The BOD_5 limits at Outfall 102 are based on the Meat and Poultry Effluent Limitations Guidelines and were calculated as follows:

1.08 MGD Permitted Flow Tier (Outfall 102):
Monthly Average: (16 mg/L)(1.08 MGD)(3.785) = 65.4 kg/d, round to 65 kg/d
Daily Maximum: (26 mg/L)(1.08 MGD)(3.785) = 106.28 kg/d, round to 110 kg/d

1.5 MGD Design Flow Tier (Outfall 102):
Monthly Average: (16 mg/L)(1.5 MGD)(3.785) = 90.84 kg/d, round to 91 kg/d
Daily Maximum: (26 mg/L)(1.5 MGD)(3.785) = 147.615 kg/d, round to 150 kg/d

C. Outfall 001:
Outfalls 101 and 102 are combined and discharged through Outfall 001. The discharge was remodeled using the Regional Stream Model to determine the effluent concentrations of $CBOD_5$, TKN, and DO that are protective of the WQS for DO at the 1.10 MGD and 1.52 MGD flow tiers. The discharge was remodeled due to:

- Revised discharge flows used for the evaluation
- Revised receiving stream and effluent temperature
- The previous model included the discharge from Calvary Mennonite Church (VA0062928). This facility installed an alternate sewage system and VPDES Permit No. VA0062928 was terminated.
- Revised 7Q10 flows for Muddy Creek and North River

The revised DO model is contained in the DEQ Valley Regional Office DO Model files and is available for review.

The following limits were indicated as a result of the model:

1.10 MGD Permitted Flow Tier (Outfall 001):
$CBOD_5$: 9.3 mg/L
TKN: 6.9 mg/L
DO: 6 mg/L

1.52 MGD Design Flow Tier (Outfall 001):
$CBOD_5$: 7.6 mg/L
TKN: 6.9 mg/L
DO: 6 mg/L

The BOD_5 limits at Outfall 001 are based on the most stringent limits after comparison between the modeled $CBOD_5$ limits and the ELG based BOD_5 limits. In order to do the comparison, the modeled concentrations of $CBOD_5$ and TKN were converted to an equivalent BOD_5 concentration utilizing the following assumptions:

$CBOD_u = CBOD_5 \times 2.5$ $\quad\quad$ $BOD_u = CBOD_u + nBOD_u$
$nBOD_u = (TKN - 3.0) \times 4.33$ $\quad\quad$ $BOD_5 = BOD_u/2.5$

The resulting monthly average BOD_5 calculated from the modeled parameters was compared to the FEG monthly average limit of 16 mg/L, and the most restrictive value was imposed in the permit. At both flow tiers the resulting monthly average BOD_5 limits based on the DO model were equal to or more stringent than the FEG monthly average limit of 16 mg/L; therefore, the monthly average limits at both flow tiers were set based on the DO model.

Because this is an industrial facility, a scale-up factor of 2 was used to calculate the daily maximum concentration limit from the monthly average limit. At both flow tiers the resulting daily maximum limits based on the DO model were higher than the FEG daily maximum limit of 26 mg/L; therefore, the daily maximum limit at both flow tiers were set based on the FEGs.

Because wet season flow frequencies were not available, wet season limits have not been included at this reissuance.

The comparisons between water quality-based limits and FEG limits and the calculation of the permit limits at Outfall 001 are shown below:

1.10 MGD Permitted Flow Tier (Outfall 001):

Modeled $CBOD_5$ = 9.3 mg/L — Modeled TKN = 6.9 mg/L

$CBOD_u$ = 9.3 mg/L x 2.5 = 23.25 mg/L — $nBOD_u$ = (6.9 mg/L – 3.0) x 4.33 = 16.88 mg/L

BOD_u = 23.25 mg/L + 16.88 mg/L = 40.13 mg/L
BOD_5 = 40.13 mg/L/2.5 = 16.05 mg/L, round to 16 mg/L
Monthly Average BOD_5 = 16 mg/L = 16 mg/L; therefore, **16 mg/L utilized as monthly average limit**
Monthly Average BOD_5 loading limit: (16 mg/L)(1.10 MGD)(3.785) = 66.62 kg/d, round to 67 kg/d
Daily Maximum BOD_5 = 16 mg/L x 2 = 32 mg/L
Daily Maximum BOD_5 = 32 mg/L > 26 mg/L; therefore, **26 mg/L utilized as daily maximum limit**
Daily Maximum BOD_5 loading limit: (26 mg/L)(1.10 MGD)(3.785) = 108.25 kg/d, round to 110 kg/d

1.52 MGD Design Flow Tier (Outfall 001):

Modeled $CBOD_5$ = 7.6 mg/L — Modeled TKN = 6.9 mg/L

$CBOD_u$ = 7.6 mg/L x 2.5 = 19 mg/L — $nBOD_u$ = (6.9 mg/L – 3.0) x 4.33 = 16.88 mg/L

BOD_u = 19 mg/L + 16.88 mg/L = 35.88 mg/L
BOD_5 = 35.88 mg/L/2.5 = 14.35 mg/L, round to 14 mg/L
Monthly Average BOD_5 = 14 mg/L < 16 mg/L; therefore, **14 mg/L utilized as monthly average limit**
Monthly Average BOD_5 loading limit: (14 mg/L)(1.52 MGD)(3.785) = 80.54 kg/d, round to 80 kg/d
Daily Maximum BOD_5 = 14 mg/L x 2 = 28 mg/L
Daily Maximum BOD_5 = 28 mg/L > 26 mg/L; therefore, **26 mg/L utilized as daily maximum limit**
Daily Maximum BOD_5 loading limit: (26 mg/L)(1.52 MGD)(3.785) = 149.5 kg/d, round to 150 kg/d

D. Reduced Monitoring Frequency Evaluation for BOD_5 at Outfall 001:
The VPDES Permit Manual indicates a monitoring frequency of 1/Week for a STP with a design flow between 1 MGD and 2 MGD. Based on the review of the effluent data during the previous permit term, the effluent BOD_5 concentration averaged approximately 33% of the monthly average limit. In accordance with the reduced monitoring guidance, the monitoring frequency has been reduced from 1/Week to 2/Month.

EVALUATION OF THE EFFLUENT – TKN

The modeled TKN of 6.9 mg/L is less than 2 times the calculated chronic WLA for Ammonia-N (2 x 3.9 = 7.8 mg/L); therefore, TKN limits are applied at Outfall 001 in lieu of applying Ammonia-N limits at Outfall 001. Because there are ELGs for Ammonia-N, the Ammonia-N limits will be applied at Outfall 102. Based on the facility's 2/Month TKN effluent data available in the Nutrient General Permit VAN010009, a schedule of compliance for meeting any new TKN limits has not been provided.

The TKN limits were calculated as follows:

1.10 MGD Permitted Flow Tier (Outfall 001):
Monthly Average TKN = 6.9 mg/L
Monthly Average TKN loading: (6.9 mg/L)(1.10 MGD)(3.785) = 28.73 kg/d, round to 29 kg/d
Daily Maximum TKN = 6.9 mg/L x 2 = 13.8 mg/L, round to 14 mg/L
Daily Maximum TKN loading: (14 mg/L)(1.10 MGD)(3.785) = 58.29 kg/d, round to 58 kg/d

1.52 MGD Design Flow Tier (Outfall 001):
Monthly Average TKN = 6.9 mg/L
Monthly Average TKN loading: (6.9 mg/L)(1.52 MGD)(3.785) = 39.6 kg/d, round to 40 kg/d
Daily Maximum TKN = 6.9 mg/L x 2 = 13.8 mg/L, round to 14 mg/L
Daily Maximum TKN loading: (14 mg/L)(1.52 MGD)(3.785) = 80.54 kg/d, round to 80 kg/d
The monitoring frequency for TKN is 2/Month under the Nutrient General Permit Registration No. VAN010009. Monitoring for TKN is 1/Week under the individual permit.

EVALUATION OF THE EFFLUENT – DO, pH, OIL AND GREASE AND FECAL COLIFORM

DO:
The DO minimum limit of 6.0 mg/L has been carried forward from the previous permit at Outfall 001 for both flow tiers.

pH:
The WQSs for pH in the receiving stream are 6.5 – 9.5 SU. The FEG specifies that the pH must be from 6.0 – 9.0 SU; pH limits based on the FEGs were imposed at Outfall 101 and 102 with a monitoring frequency of 1/Year. A minimum pH limit of 6.5 SU and a maximum pH limit of 9.0 SU at Outfall 001 have been carried forward from the previous permit. The monitoring frequency for pH is 1/Day because pH adjustment is a part of the treatment process at this facility.

Oil and Grease (as HEM):
Oil and Grease limits at Outfall 102 are based on Meat and Poultry Effluent Limitations Guidelines as follows:

1.08 MGD Permitted Flow Tier (Outfall 102):
Monthly Average: (8.0 mg/L)(1.08 MGD)(3.785) = 32.70 kg/d, round to 33 kg/d
Daily Maximum: (14 mg/L)(1.08 MGD)(3.785) = 57.23 kg/d, round to 57 kg/d

1.5 MGD Design Flow Tier (Outfall 102):
Monthly Average: (8.0 mg/L)(1.5 MGD)(3.785) = 45.42 kg/d, round to 45 kg/d
Daily Maximum: (14 mg/L)(1.5 MGD)(3.785) = 79.485 kg/d, round to 79 kg/d

Fecal Coliform:
Fecal Coliform limits are specified in the ELGs and apply at Outfall 102. These limits have been carried forward from the previous permit.

There is also a Muddy Creek TMDL for Fecal Coliform that applies to Outfall 001 which is discussed in the EVALUATION OF THE EFFLUENT – DISINFECTION section contained in this Appendix.

EVALUATION OF THE EFFLUENT – TSS

A. Outfall 101 (Sanitary WWTP):
The TSS limits at Outfall 101 are based on the Secondary Treatment Regulations as follows:
Monthly Average: (30 mg/L)(0.020 MGD)(3.785) = 2.27 kg/d, round to 2.3 kg/d
Maximum Weekly Average: (45 mg/L)(0.020 MGD)(3.785) = 3.4 kg/d

B. Outfall 102 (Industrial WWTP):
The TSS limits at Outfall 102 are based on Meat and Poultry Effluent Limitations Guidelines as follows:

1.08 MGD Permitted Flow Tier (Outfall 102):
Monthly Average: (20 mg/L)(1.08 MGD)(3.785) = 81.756 kg/d, round to 82 kg/d
Daily Maximum: (30 mg/L)(1.08 MGD)(3.785) = 122.6, round to 120 kg/d

1.5 MGD Design Flow Tier (Outfall 102):
Monthly Average: (20 mg/L)(1.5 MGD)(3.785) = 113.5, round to 110 kg/d
Daily Maximum: (30 mg/L)(1.5 MGD)(3.785) = 170.3, round to 170 kg/d

C. Outfall 001
The Muddy Creek TMDL includes a Sediment WLA of 284,860 lb/yr for this facility which represents a TSS monthly average loading of 354.319 kg/day.

The Chesapeake Bay TMDL specifies a WLA of 66,649 lb/year for this facility which represents a monthly average of 182.6 lb/day or 82.90 kg/day.

TSS limits at Outfall 001 were calculated as follows:

1.10 MGD Permitted Flow Tier (Outfall 001):
Concentration Limits:
Monthly Average: 182.6 lb/day = (mg/L)(1.10 MGD)(8.3438)
= 19.89 mg/L, round down to 19 mg/L to meet WLA

Daily Maximum: 19 mg/L x 2 = 38 mg/L

The previous permit had a Daily Maximum concentration limit of 30 mg/L. In order to meet antibacksliding requirements, the Daily Maximum concentration limit of 30 mg/L has been carried forward from the previous permit.

Mass Limits:
Monthly Average: kg/d = (19 mg/L)(1.10 MGD)(3.785)
= 79.10 kg/d, round to 79 kg/d

Daily Maximum: (30 mg/L)(1.10 MGD)(3.785)
= 124.9 kg/d, round to 120 kg/d

1.52 MGD Design Flow Tier (001):
Concentration Limits:
Monthly Average: 182.6 lb/day = (mg/L)(1.52 MGD)(8.3438)
= 14.39 mg/L, round to 14 mg/L
Daily Maximum: 14 mg/L x 2 = 28 mg/L

Mass Limits:
Monthly Average: kg/d = (14 mg/L)(1.52 MGD)(3.785)
= 80.54 kg/d, round to 80 kg/d
Daily Maximum: (28 mg/L)(1.52 MGD)(3.785)
= 161.08 kg/d, round to 160 kg/d

The monthly average TSS loading of 80 kg/d is less than the monthly average loading of 82.90 kg/day specified in the Chesapeake Bay TMDL.

EVALUATION OF THE EFFLUENT – DISINFECTION

The Muddy Creek TMDL includes a Fecal Coliform WLA of 8.34 X 10^{8} cfu for this facility. The TMDL WLA must be met at Outfall 001.

The DEQ TMDL staff provided the following translator equation to calculate the E. coli concentration that is necessary to meet the Fecal Coliform WLA: "2^(LOG(Fecal Coliform Concentration,2)*0.91905-0.0172"

When evaluating E. coli at this facility, it is important to remember that each waste stream (industrial WWTP and Sanitary WWTP) receives complete treatment prior to combination and discharge through Outfall 001. All treatment occurs separately. There is UV disinfection for the industrial WWTP (Outfall 102) and there is a separate UV disinfection system for the Sanitary WWTP (Outfall 101).

The permittee requested that E. coli limits and monitoring requirements be applied at Outfall 101 and 102 rather than at Outfall 001; therefore, the E. coli limits were allocated between Outfalls 101 and 102 such that the E. coli WLA of 8.34 X 10^{8} was met at Outfall 001 as shown below:

Outfall 001 – Permit Limit Evaluation Based on flow of 1.10 MGD:

Outfall	Flow (MGD)	E. coli (cfu/100 mL)	Fecal Coliform (cfu/100 mL)	Fecal Coliform (cfu/day)	Total Fecal Coliform (cfu/day)
Outfall 102 – Industrial WWTP - Permitted Flow Tier of 1.08 MGD	1.08	13.2, round down to 13 to meet TMDL WLA	17	6.86E +08	
Outfall 101 – Sewage Treatment Plant	0.02	126	195	1.48E +08	
Outfall 001	1.10				8.34E +08

Outfall 001 – Permit Limit Evaluation Based on flow of 1.52 MGD:

Outfall	Flow (MGD)	E. coli (cfu/100 mL)	Fecal Coliform (cfu/100 mL)	Fecal Coliform (cfu/day)	Total Fecal Coliform (cfu/day)
Outfall 102 – Industrial WWTP – Design Flow of 1.5 MGD	1.5	9.76, round down to 9 to meet TMDL WLA	12	6.86E+08	
Outfall 101 – Sewage Treatment Plant	0.02	126	195	1.48E+08	
Outfall 001	1.52				8.34E+08

The E. coli limits are more stringent than the previous E. coli limits. A typographical error in the E. coli limit calculation going back to the 2009 permit was discovered. The Muddy Creek Bacteria TMDL for Fecal Coliform is 8.34 X 10^{8} cfu/day. The excel spreadsheet used to calculate the 97 cfu/100 mL limit in the 2009 permit used a TMDL WLA of 8.34 X 10^{9} rather than 8.34 X 10^{8}. This has been corrected in the 2014 permit.

A review of the DMR data indicates that the permittee can meet the more stringent E. coli limitations at both Outfall 101 and 102; therefore, a compliance schedule was not included in the permit.

Sanitary WWTP (Outfall 101):
In order to ensure that adequate disinfection occurs for the sanitary wastewater, E. coli limits and monitoring will be carried forward from the previous permit. The monitoring frequency for E. coli was changed from 1/Week to 4/Month.

Industrial WWTP (Outfall 102):
The Federal Effluent Limitations Guidelines for Meat and Poultry Products specify a technology-based Fecal Coliform maximum of 400 cfu/100 mL. Fecal coliform monitoring of 1/Year has been included to demonstrate compliance with the concentration limit. E. coli monitoring of 3/Week has been included to demonstrate compliance with the concentration limit for both the 1.08 MGD permitted flow tier and the 1.5 MGD design flow tier.

The permittee uses separate UV disinfection treatment at both the sanitary WWTP and the industrial WWTP. The permittee has no plans to ever change the disinfection method back to chlorine disinfection. VPDES permits are normally drafted to contain both chlorine disinfection and alternate disinfection requirements so a permit modification is not necessary if the permittee changes their disinfection system. The permittee requested that the chlorine disinfection requirements be removed from the permit since they will never be going back to chlorine disinfection.

EVALUATION OF THE EFFLUENT – NUTRIENTS
In accordance with § 62.1-44.19:14.C.5. of the Code of Virginia, this Significant Discharger has submitted a Registration Statement and DEQ has recognized that they are covered under the General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia (9VAC25-820-10 *et seq.*). The effective date of coverage is January 1, 2012. Coverage under the General Permit will expire December 31, 2016.

The following loading limits were originally established for Outfall 001 based on a TN effluent concentration of 6.0 mg/L and a TP concentration of 0.3 mg/L:

- TN = 27,410 pounds per calendar year
- TP = 1,371 pounds per calendar year

These WLAs for TN and TP were established based on the industrial WWTP design flow of 1.5 MGD. The sanitary WWTP (design flow of 0.020 MGD) was not given WLAs for TN and TP as its design flow is less than 0.5 MGD.

Because the industrial WWTP (design flow of 1.5 MGD) and sanitary WWTP (design flow of 0.020 MGD) discharges are combined prior to discharge through Outfall 001 to Muddy Creek, the loading limits for TN and TP apply to the combined discharge from Outfall 001.

Permit limit evaluations at Outfall 001 were done based on flows of 1.10 MGD and 1.52 MGD based on the combined flows from the industrial WWTP and sanitary WWTP; however, the loading limits of 27,410 pounds per year for TN and 1,371 pounds per year for TP remain unchanged.

Offset plans are required for new and expanded facilities. This facility was upgraded but not expanded; therefore, no offset plan is required.

Prior to a facility expansion beyond 1.5 MGD, the permittee must demonstrate that sufficient WLAs have been acquired to offset any increase in the delivered TN and delivered TP loads. The CER requirement and the permit reopener condition ensure that the facility will receive appropriate concentration limits when necessary for expanded or upgraded facilities based on the treatment technology proposed.

EVALUATION OF THE EFFLUENT – TOTAL NITROGEN

A. Outfall 102 (Industrial WWTP)
The Federal Effluent Limitations Guidelines (ELGs) for Meat and Poultry Products specify BAT limits for Total Nitrogen of monthly average 103 mg/L and daily maximum 147 mg/L. These limits are applicable at Outfall 102 (Industrial WWTP) as follows:

1.08 MGD Permitted Flow Tier (Outfall 102):
Monthly Average, kg/d = (103 mg/L)(1.08 MGD)(3.785) = 421.04 kg/d, round to 420 kg/d
Daily Maximum, kg/d = (147 mg/L)(1.08 MGD)(3.785) = 600.91 kg/d, round to 600 kg/d

1.5 MGD Design Flow Tier (Outfall 102):
Monthly Average, kg/d = (103 mg/L)(1.5 MGD)(3.785) = 584.78 kg/d, round to 580 kg/d
Daily Max., kg/d = (147 mg/L)(1.5 MGD)(3.785) = 834.59 kg/d, round to 830 kg/d

TN limits and monitoring are included at Outfall 102 once per year based on ELGs.

B. Outfall 001
The ELGs for TN were applied at Outfall 001 based on BPJ to be consistent with the monitoring location under the Nutrient General Permit Registration No. VAN010009. This approach avoids additional costs to the permittee for duplicate monitoring at multiple outfalls.

The limits were calculated as follows:

1.10 MGD Permitted Flow Tier (Outfall 001):
Monthly Average, kg/d = (103 mg/L)(1.10 MGD)(3.785) = 428.8 kg/d, round to 430 kg/d
Daily Maximum, kg/d = (147 mg/L)(1.10 MGD)(3.785) = 612.03 kg/d, round to 610 kg/d

1.52 MGD Design Flow Tier (Outfall 001):
Monthly Average, kg/d = (103 mg/L)(1.52 MGD)(3.785) = 592 kg/d, round to 590 kg/d
Daily Maximum, kg/d = (147 mg/L)(1.52 MGD)(3.785) = 845 kg/d, round to 840 kg/d

EVALUATION OF THE EFFLUENT – TOTAL PHOSPHORUS

Technology-Based Limits for TP at Outfall 102:
The permittee chose to upgrade the existing 1.5 MGD industrial WWTP to meet technology-based TP concentration limits. Following is the history of the work done:

1. On January 20, 2010 a CER was approved for a Phosphorus Removal System. The CER included a 6-month study period. A treatment system optimization plan would be submitted outlining the procedures to be used during the 6-month period.

2. An Optimization Plan for the Phosphorus Removal System was approved on March 15, 2010. The primary treatment units included a coagulation tank, flocculation tank, polymer feed system, dissolved air flotation unit and solids handling and storage facilities. Because the phosphorus removal efficacy for this system was only been demonstrated in bench-scale tests, a six month optimization study was required for the full-scale system.

3. The Optimization Study Plan – Phosphorus Removal System, Phase II was approved on September 1, 2011. A coagulation tank, flocculation tank, polymer feed system, dissolved air flotation unit and solids handling and storage facilities were installed. The permittee planned to install phosphorus removal tower filters to further reduce the phosphorus concentration in the effluent. A 2-year Optimization Study Evaluation of the equipment's ability to remove phosphorus was to be performed.

4. The 2-year Optimization Study Evaluation began on January 1, 2012 and ran through December 31, 2013. During this time, quarterly reports were to be submitted to DEQ containing the analytical results for TP.

5. A report dated January 31, 2014 from Blackwell Engineering entitled "Limits of Technology, Total Phosphorus Study, December 2011 to November 2013" was submitted to DEQ for review. No TP concentration limit was proposed.

6. A meeting was held with the permittee on February 21, 2014 to discuss the January 31, 2014 report. It was discussed that when the VPDES permit was reissued, that a new Outfall 102 for the Industrial WWTP would be added and that the TP technology-based limit would be applied at that location. There was also discussion whether the permittee planned to again request a permitted flow tier of 1.1 MGD at the industrial WWTP when the permit application was submitted in June 2014.

7. A letter dated March 4, 2014 from Mick Baugher, Complex Manager of VPGC, LLC, was received proposing a value of 1.85 mg/L TP be established for the TP technology-based limit at Outfall 001. The letter stated that the value of corn was reduced and it was likely that poultry production would increase resulting in the need for the TP limit of 1.85 mg/L.

8. The proposal was discussed with Allan Brockenbrough of DEQ Central Office in March 2014. Because of the possible increase in poultry production, the possibility of going to the 1.5 MGD flow tier, and the proposed new Outfall 102 sampling location, the decision was made to hold off a decision on the final concentration limit for TP pending receipt of the permit renewal application.

9. The permit application was received on May 29, 2014. The application requested a new Outfall 102 sampling point for the industrial WWTP and also requested that permit limits for Outfall 102 be calculated based on the design flow of 1.5 MGD and a permitted flow of 1.08 MGD. A review of the DMRs submitted from March to June 2014 indicated that the average industrial WWTP flow continues to remain in the 0.80 to 1.0 MGD range. The application was deemed complete on June 10, 2014.

Conclusion: CERs have been previously approved for the technology installed at the industrial WWTP (Outfall 102) to remove TP. A new Outfall 102 monitoring point at the final discharge from the industrial WWTP has been established at this reissuance to apply the new TP concentration limits. A monthly average TP limit of 1.85 mg/L has been imposed at Outfall 102 for both the 1.08 MGD permitted flow tier and the 1.5 MGD design flow tier. The WLA of 1,371 pounds per calendar year TP contained in the Registration List and Nutrient General Permit VAN010009 will continue to apply at the combined Outfall 001.

EVALUATION OF THE EFFLUENT – NITRATE:
The following memorandum dated June 24, 2002 provides an interpretation of the Muddy Creek Nitrate TMDL which specified a 35% reduction in nitrates at this facility from pre-TMDL levels:

MEMORANDUM
DEPARTMENT OF ENVIRONMENTAL QUALITY
VALLEY REGIONAL OFFICE

4411 Early Road - P.O. Box 3000 Harrisonburg, VA 22801

Subject: Calculation of Nitrate Effluent limits for Pilgrim's Pride – Hinton (VA0002313) based on the applicable approved Nitrate TMDL Nitrate Nitrogen Wasteload Allocation.

To: PP File
From: Larry Hough
Date: June 24, 2002
Copies: Bev Carver – DEQ, Ron Harrison, - Pil. Pride, Ron Phillips – DEQ, Sandra Mueller - DEQ

Pilgrims Pride has agreed to comply with a 35% Nitrate Wasteload Allocation Reduction. The value they are allowed, based on that reduction, is believed by DEQ to be 49,389 pounds of Nitrate Nitrogen per year in their effluent. The following uses two effluent flows that were discussed (in a meeting between DEQ and Pilgrims Pride - Hinton on 6/21/02) to calculate resulting Nitrate Nitrogen effluent limits. The Pilgrims Pride – Hinton Wastewater Treatment Facility is currently permitted at a design Maximum flow of 1.1 MGD. (The fact sheet for the 1999 reissuance uses, in various places, 1.08 MGD, 1.099 MGD, and 1.1 MGD as the design flow. After reviewing this fact sheet I believe that using 1.1 MGD adequately represents the current production level II design flow for Water Quality Based permitting purposes.) Pilgrim's Pride believes it will eventually permit their wastewater treatment facility at 1.5 MGD at production level II, although it intends to move to production level two and discharge at or below 1.1 MGD until the permit reissuance effective in 2004.

TMDL Nitrate Wasteload Allocation = 49,389 # Nitrate Nitrogen/Year
Current Permitted Design Flow = 1.1 MGD
Eventual Permitted Design Flow = 1.5 MGD

Calculation of Nitrate Nitrogen Effluent Limit for Pilgrims Pride WWTP Outfall 001:

49,389 # Nitrate Nitrogen/Year / 2.2046 = 22,402.7 kg/year

22,402.7 / 365 = 61.3773 kg/day

61.3773 kg/day / 1.1 MGD / 3.785 = **14.74** mg/l Nitrate Nitrogen, at a design flow of 1.1 MGD

61.3773 kg/day / 1.5 MGD / 3.785 = **10.81** mg/l Nitrate Nitrogen, at a design flow of 1.5 MGD

DEQ believes that one or both of these two Nitrate Nitrogen effluent limitations will be in the next VPDES permit reissuance (2004) for this facility.

The Muddy Creek TMDL includes a Nitrate WLA of 49,389 lb/yr for this facility which represents a 35% reduction from pre-TMDL levels. There are no TMDL WLAs based on concentration. This converts to 61.375 kg/day as follows:

(49,389 lb/Year)(1Year/365 days)(1kg/2.2047 lb) = 61.375 kg/day

At the last reissuance, DEQ TMDL staff recommended that the nitrate limits be imposed as monthly average and daily maximum concentration and loading limits. This approach has been continued at this reissuance.

Nitrate limits at Outfall 001 were calculated to meet the TMDL as follows:

1.10 MGD Permitted Flow Tier (Outfall 001):
Concentration Limits:
Monthly Average: 61.375 kg/d = (mg/L)(1.10 MGD)(3.785) = 14.74 mg/L, round to 15 mg/L
Daily Maximum: 15 mg/L x 2 = 30 mg/L

Mass Limits:
Monthly Average: 61.375 kg/d, round down to 61 kg/d to comply with mass based TMDL
Daily Maximum: (30 mg/L)(1.10 MGD)(3.785) = 124.9 kg/d, round to 120 kg/d

1.52 MGD Design Flow Tier (Outfall 001):
Concentration Limits:
Monthly Average: 61.375 kg/d = (mg/L)(1.52 MGD)(3.785)
= 10.66 mg/L, round to 11 mg/L
Daily Maximum: 11 mg/L x 2 = 22 mg/L

Mass Limits:
Monthly Average: 61.375 kg/d, round down to 61 kg/d to comply with mass based TMDL
Daily Maximum: (22 mg/L)(1.52 MGD)(3.785) = 126.5 kg/d, round to 130 kg/d

The Nitrate limits above have been carried forward from the previous permit with an adjustment to the daily maximum load at the 1.52 MGD flow.

EVALUATION OF THE EFFLUENT – TOXICS:

Stream: Water quality data for the receiving stream were obtained from Ambient Monitoring Station No. 1BMDD005.81 on Muddy Creek located at the Route 726 Bridge.

Stream Information			
90% Annual Temp (°C) =	25	90% pH (SU) =	8.7
90% Wet Temp (°C) =	NA	10% pH (SU) =	7.6
Mean Hardness (mg/L) =	220		

All toxic pollutants, including Ammonia-N and TRC, are assumed absent in the receiving stream because there are no data for these parameters directly above the discharge.

Discharge: The pH and temperature values were obtained from June 2012 to October 2013 operating logs. Data prior to June 2012 is not representative because it was collected at the final discharge from the industrial WWTP (Outfall 102) rather than the combined Outfall 001. The hardness value was obtained from monitoring data collected during a DEQ inspection.

Effluent Information			
90% Annual Temp (°C) =	25.7	90% pH (SU) =	7.45
90% Wet Temp (°C) =	NA	10% pH (SU) =	6.95
Mean Hardness (mg/L) =	228		

WQC and WLAs were calculated for the WQS parameters for which data is available. Those WQC and WLAs are presented in this appendix.

Current agency guidelines recommend the evaluation of toxic pollutant limits for Ammonia-N for municipal WWTPs (Outfall 101) based on a default effluent concentration of 9 mg/L and for industrial WWTPs (Outfall 102) based on actual effluent Ammonia-N data, if available. Effluent Ammonia-N data are available for this facility at the combined Outfall 001. Outfall 101 (STP) represents only 1-2% of the total discharge; therefore effluent Ammonia-N data at Outfall 001 were used in the evaluation.

Ammonia-N was analyzed per the protocol for evaluation of effluent toxic pollutants included in this appendix with the following results for Outfall 001:

Ammonia-N: ELGs for Ammonia-N of Monthly Average = 4.0 mg/L and Daily Maximum = 8.0 mg/L apply at Outfall 102. Any water quality-based Ammonia-N limits, if needed, apply at Outfall 001.

- 1.10 MGD Permitted Flow Tier (001): The evaluation indicated that no water quality-based Ammonia-N limits were required at Outfall 001; however, Monthly Average Ammonia-N of 4.0 mg/l and Daily Maximum of 8.0 mg/L were applied to Outfall 102 based on ELGs. These limits are identical to the Ammonia-N limits contained in the previous permit for Outfall 001.

- 1.52 MGD Design Flow Tier (001): The evaluation indicated that no water quality-based Ammonia-N limits were required at Outfall 001; however, Monthly Average Ammonia-N of 4.0 mg/L and Daily Maximum of 8.0 mg/L were applied to Outfall 102 based on ELGs. The Monthly Average limit of 4.0 mg/L is identical to the Ammonia-N limits in the previous permit at Outfall 001. The Daily Maximum Limit of 8.0 mg/L is less stringent than the previous limit of 7.7 mg/L at Outfall 001. Because the permit limits at the 1.52 MGD flow have never become effective, the less stringent limit meets antibacksliding requirements.

WQC-WLA SPREADSHEET INPUT – 1.10 MGD Permitted Flow Tier (Outfall 001):

WATER QUALITY CRITERIA / WASTE LOAD ALLOCATION ANALYSIS

Facility Name: VPGC, LLC - Outfall 001
Receiving Stream: Muddy Creek
Permit No.: VA0002313
Date: 8/26/2014
Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information			Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO3) =	220	mg/L	1Q10 (Annual) =	0.457	MGD	Annual	- 1Q10 Flow =	100 %	Mean Hardness (as CaCO3) =	228	mg/L
90% Temperature (Annual) =	25	deg C	7Q10 (Annual) =	0.536	MGD		- 7Q10 Flow =	100 %	90% Temp (Annual) =	25.7	deg C
90% Temperature (Wet season) =	NA	deg C	30Q10 (Annual) =	0.758	MGD		- 30Q10 Flow =	100 %	90% Temp (Wet season) =	NA	deg C
90% Maximum pH =	8.7	SU	1Q10 (Wet season) =	NA	MGD	Wet Season	- 1Q10 Flow =	NA %	90% Maximum pH =	7.45	SU
10% Maximum pH =	7.6	SU	30Q10 (Wet season) =	NA	MGD		- 30Q10 Flow =	NA %	10% Maximum pH =	6.95	SU
Tier Designation =	1		30Q5 =	1.07	MGD				Current Discharge Flow =	1.10000	MGD
Public Water Supply (PWS) Y/N?	N		Harmonic Mean =	3.66	MGD				Discharge Flow for Limit Analysis	1.10000	MGD
V(alley) or P(iedmont)? =	V										
Trout Present Y/N? =	N										
Early Life Stages Present Y/N? =	Y										

Footnotes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise.
2. All flow values are expressed as Million Gallons per Day (MGD).
3. Discharge volumes are highest monthly average or 2C maximum for Industries and design flows for Municipals.
4. Hardness expressed as mg/l CaCO3. Standards calculated using Hardness values in the range of 25-400 mg/l CaCO3.
5. "Public Water Supply" protects for fish & water consumption. "Other Surface Waters" protects for fish consumption only.
6. Carcinogen "Y" indicates carcinogenic parameter.
7. Ammonia WQSs selected from separate tables, based on pH and temperature.
8. Metals measured as Dissolved, unless specified otherwise.
9. WLA = Waste Load Allocation (based on standards).
10. WLA = Waste Load Allocation (based on standards).
11. WLAs are based on mass balances (less background, if data exist).
12. Acute - 1 hour avg. concentration not to be exceeded more than 1/3 years.
13. Chronic - 4 day avg. concentration (30 day avg. for Ammonia) not to be exceeded more than 1/3 years.
14. Mass balances employ 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, and Harmonic Mean for Carcinogens. Actual flows employed are a function of the mixing analysis and may be less than the actual flows.
15. Effluent Limitations are calculated elsewhere using the minimum WLA and EPA's statistical approach (Technical Support Document).

WQC-WLA SPREADSHEET OUTPUT – 1.10 MGD Permitted Flow Tier (Outfall 001):

Facility Name:	Permit No.:	WATER QUALITY CRITERIA				NON-ANTIDEGRADATION WASTE LOAD ALLOCATIONS		
VPGC, LLC - Outfall 001	VA0002313	1.100 MGD Discharge Flow - Mix per "Mixer"				1.100 MGD Discharge - Mix per "Mixer"		
Receiving Stream:	Date:	Aquatic Protection		Human Health		Aquatic Protection		Human
Muddy Creek	10/17/2014	Acute	Chronic	Public Water Supplies	Other Surface Waters	Acute	Chronic	Health
Toxic Parameter and Form	Carcinogen?							
Ammonia-N (Annual)	N	1.7E+01 mg/L	1.8E+00 mg/L	None	None	2.4E+01 mg/L	3.1E+00 mg/L	N/A

WQC-WLA SPREADSHEET INPUT – 1.52 MGD Design Flow Tier (Outfall 001):

WATER QUALITY CRITERIA / WASTE LOAD ALLOCATION ANALYSIS

Facility Name: VPGC, LLC - Outfall 001
Receiving Stream: Muddy Creek
Permit No.: VA0002313
Date: 8/20/2014
Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information			Stream Flows			Mixing Information				Effluent Information		
Mean Hardness (as CaCO3) =	220	mg/L	1Q10 (Annual) =	0.457	MGD	Annual	- 1Q10 Flow =	100	%	Mean Hardness (as CaCO3) =	228	mg/L
90% Temperature (Annual) =	25	deg C	7Q10 (Annual) =	0.536	MGD		- 7Q10 Flow =	100	%	90% Temp (Annual) =	25.7	deg C
90% Temperature (Wet season) =	NA	deg C	30Q10 (Annual) =	0.758	MGD		- 30Q10 Flow =	100	%	90% Temp (Wet season) =	NA	deg C
90% Maximum pH =	8.7	SU	1Q10 (Wet season) =	NA	MGD	Wet Season	- 1Q10 Flow =	NA	%	90% Maximum pH =	7.45	SU
10% Maximum pH =	7.6	SU	30Q10 (Wet season) =	NA	MGD		- 30Q10 Flow =	NA	%	10% Maximum pH =	6.95	SU
Tier Designation =	1		30Q5 =	1.07	MGD					Current Discharge Flow =	1.52000	MGD
Public Water Supply (PWS) Y/N?	N		Harmonic Mean =	3.66	MGD					Discharge Flow for Limit Analysis	1.52000	MGD
V(alley) or P(iedmont)? =	V											
Trout Present Y/N? =	N											
Early Life Stages Present Y/N? =	Y											

Footnotes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise.
2. All flow values are expressed as Million Gallons per Day (MGD).
3. Discharge volumes are highest monthly average or 2C maximum for Industries and design flows for Municipals.
4. Hardness expressed as mg/l CaCO3. Standards calculated using Hardness values in the range of 25-400 mg/l CaCO3.
5. "Public Water Supply" protects for fish & water consumption. "Other Surface Waters" protects for fish consumption only.
6. Carcinogen "Y" indicates carcinogenic parameter.
7. Ammonia WQSs selected from separate tables, based on pH and temperature.
8. Metals measured as Dissolved, unless specified otherwise.
9. WLA = Waste Load Allocation (based on standards).
10. WLA = Waste Load Allocation (based on standards).
11. WLAs are based on mass balances (less background, if data exist).
12. Acute - 1 hour avg. concentration not to be exceeded more than 1/3 years.
13. Chronic - 4 day avg. concentration (30 day avg. for Ammonia) not to be exceeded more than 1/3 years.
14. Mass balances employ 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, and Harmonic Mean for Carcinogens. Actual flows employed are a function of the mixing analysis and may be less than the actual flows.
15. Effluent Limitations are calculated elsewhere using the minimum WLA and EPA's statistical approach (Technical Support Document).

WQC-WLA SPREADSHEET OUTPUT – 1.52 MGD Design Flow Tier (Outfall 001)

Facility Name: VPGC, LLC - Outfall 001
Permit No.: VA0002313
Receiving Stream: Muddy Creek
Date: 10/17/2014

WATER QUALITY CRITERIA
1.520 MGD Discharge Flow - Mix per "Mixer"

NON-ANTIDEGRADATION WASTE LOAD ALLOCATIONS
1.520 MGD Discharge - Mix per "Mixer"

Toxic Parameter and Form	Carcinogen?	Aquatic Protection Acute		Aquatic Protection Chronic		Human Health Public Water Supplies		Human Health Other Surface Waters		Non-Antidegradation Aquatic Protection Acute		Non-Antidegradation Aquatic Protection Chronic		Non-Antidegradation Human Health
Ammonia-N (Annual)	N	1.8E+01	mg/L	1.9E+00	mg/L	None		None		2.4E+01	mg/L	2.9E+00	mg/L	N/A
Antimony	N	None		None		5.6E+00		6.4E+02		N/A		N/A		1.1E+03
Arsenic	N	3.4E+02		1.5E+02		1.0E+01		None		4.4E+02		2.0E+02		N/A
Cadmium	N	9.8E+00		2.2E+00		5.0E+00		None		1.3E+01		2.9E+00		N/A
Chloride	N	8.6E+02	mg/L	2.3E+02	mg/L	2.5E+02	mg/L	None		1.1E+03	mg/L	3.1E+02	mg/L	N/A
Chloroform	N	None		None		3.4E+02		1.1E+04		N/A		N/A		1.9E+04
Chromium (+3)	N	1.1E+03		1.4E+02		None		None		1.4E+03		2.0E+02		N/A
Chromium (+6)	N	1.6E+01		1.1E+01		None		None		2.1E+01		1.5E+01		N/A
Copper	N	2.9E+01		1.8E+01		1.3E+03		None		3.8E+01		2.4E+01		N/A
Lead	N	3.4E+02		3.8E+01		1.5E+01		None		4.4E+02		5.2E+01		N/A
Nickel	N	3.6E+02		4.0E+01		6.1E+02		4.6E+03		4.7E+02		5.5E+01		7.8E+03
Silver	N	1.4E+01		None		None		None		1.8E+01		N/A		N/A
Zinc	N	2.3E+02		2.4E+02		7.4E+03		2.6E+04		3.0E+02		3.2E+02		4.4E+04

PROTOCOL FOR THE EVALUATION OF THE EFFLUENT – TOXIC POLLUTANTS :

The 2009 Fact Sheet contained an evaluation of toxic pollutants based on an Outfall 001 flow of 1.5 MGD. A flow of 1.52 MGD for Outfall 001 was used in the 2014 permit limits evaluation; therefore, the toxic parameters were re-evaluated using the Outfall 001 flow of 1.52 MGD.

Toxic pollutants were evaluated in accordance with OWP Guidance Memo No. 00-2011. Acute and Chronic WLAs (WLA_a and WLA_c) were analyzed according to the protocol below using a statistical approach (STAT.exe) to determine the necessity and magnitude of limits. Human Health WLAs (WLA_{hh}) were analyzed according to the same protocol through a simple comparison with the effluent data. If the WLA_{hh} exceeded the effluent datum or data mean, no limits were required. If the effluent datum or data mean exceeded the WLA_{hh}, the WLA_{hh} was imposed as the limit.

Since there are no data available immediately upstream of this discharge, all other upstream (background) pollutant concentrations are assumed to be "0".

The steps used in evaluating the effluent data are as follows:

A. If all data are reported as "below detection" or < the Quantification Level (QL), and at least one detection level is ≤ the required QL, then the pollutant is considered to be not significantly present in the discharge and no further monitoring is required.

B. If all data are reported as "below detection", and all detection levels are > the required QL, then an evaluation is performed in which the pollutant is assumed present at the lowest reported detection level.

B.1. If the evaluation indicates that no limits are needed, then the existing data set is adequate and no further monitoring is required.

B.2. If the evaluation indicates that limits are needed, then the existing data set is inadequate to make a determination and additional monitoring is required.

C. If any data value is reported as detectable at or above the required QL, then the data are adequate to determine whether effluent limits are needed.

C.1. If the evaluation indicates that no limits are needed, then no further monitoring is required.

C.2. If the evaluation indicates that limits are needed, then the limits and associated requirements are specified in the draft permit.

C.3. (Exception for Metals data only) If the evaluation indicates that limits are needed, but the data are reported as a form other than "Dissolved" (except for Selenium), then the existing data set is inadequate to make a determination and additional monitoring is required.

C.4. (Exception for total sulfide and dissolved sulfide only) If any data value for total sulfide or dissolved sulfide is reported at or above the required QL, then additional monitoring requirements are specified in the draft permit for dissolved sulfide and for hydrogen sulfide.

C.5. (Exception for hydrogen sulfide data only) If the evaluation indicates that limits are needed, then a requirement to submit a Hydrogen Sulfide Minimization Plan for approval no later than 90 days following the effective date of the permit is specified in the draft permit.

1.52 MGD Design Flow Tier (Outfall 001)

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
METALS					
Antimony, dissolved	7440-36-0	0.2	<5	d	B.1
Arsenic, dissolved	7440-38-2	1.0	<5	d	B.1
Barium, dissolved	7440-39-3	---	Applicable to PWS waters only	---	---
Cadmium, dissolved	7440-43-9	0.3	<0.5	d	B.1
Chromium III, dissolved	16065-83-1	0.5	<3	d	B.1
Chromium VI, dissolved	18540-29-9	0.5	<3	d	B.1
Chromium, Total	7440-47-3	---	Applicable to PWS waters only	---	---
Copper, dissolved	7440-50-8	0.5	<5	d	B.1
Iron, dissolved	7439-89-6	1.0	Applicable to PWS waters only	---	---
Lead, dissolved	7439-92-1	0.5	<5	d	B.1
Manganese, dissolved	7439-96-5	0.2	Applicable to PWS waters only	---	---
Mercury, dissolved	7439-97-6	1.0	<0.2	d	A
Nickel, dissolved	7440-02-0	0.5	<5	d	B.1
Selenium, total recoverable	7782-49-2	2.0	<1	d	A
Silver, dissolved	7440-22-4	0.2	<1	d	B.1
Thallium, dissolved	7440-28-0	---	<5	d	A
Zinc, dissolved	7440-66-6	2.0	57	d	C.1
PESTICIDES/PCBS					
Aldrin [C]	309-00-2	0.05	<0.05	d	A
Chlordane [C]	57-74-9	0.2	<0.2	d	A
Chlorpyrifos	2921-88-2	(5)	<0.2	d	A
DDD [C]	72-54-8	0.1	<0.05	d	A
DDE [C]	72-55-9	0.1	<0.05	d	A
DDT [C]	50-29-3	0.1	<0.05	d	A
Demeton	8065-48-3	---	<1	d	A
Diazinon	333-41-5	---	<0.29	b	A
Dieldrin [C]	60-57-1	0.1	<0.05	d	A
Alpha-Endosulfan	959-98-8	0.1	<0.05	d	A
Beta-Endosulfan	33213-65-9	0.1	<0.05	d	A
Alpha-Endosulfan + Beta-Endosulfan		---	<0.10	d	A
Endosulfan Sulfate	1031-07-8	0.1	<0.05	d	A
Endrin	72-20-8	0.1	<0.05	d	A
Endrin Aldehyde	7421-93-4	---	<0.05	d	A
Guthion	86-50-0	---	<1	d	A
Heptachlor [C]	76-44-8	0.05	<0.05	d	A
Heptachlor Epoxide [C]	1024-57-3	---	<0.05	d	A
Hexachlorocyclohexane Alpha-BHC [C]	319-84-6	---	<0.05	d	A
Hexachlorocyclohexane Beta-BHC [C]	319-85-7	---	<0.05	d	A
Hexachlorocyclohexane Gamma-BHC (synonym = Lindane)	58-89-9	---	<0.05	d	A
Kepone	143-50-0	---	<5	d	A

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Malathion	121-75-5	---	<1	d	A
Methoxychlor	72-43-5	---	<0.05	d	A
Mirex	2385-85-5	---	<0.05	d	A
Parathion	56-38-2	---	<1	d	A
PCB Total [C]	1336-36-3	7.0	<0.5	d	A
Toxaphene [C]	8001-35-2	5.0	<0.5	d	A
BASE NEUTRAL EXTRACTABLES					
Acenaphthene	83-32-9	10.0	<5	d	A
Anthracene	120-12-7	10.0	<5	d	A
Benzidine [C]	92-87-5	---	<5	d	A
Benzo (a) anthracene [C]	56-55-3	10.0	<5	d	A
Benzo (b) fluoranthene [C]	205-99-2	10.0	<5	d	A
Benzo (k) fluoranthene [C]	207-08-9	10.0	<5	d	A
Benzo (a) pyrene [C]	50-32-8	10.0	<5	d	A
Bis 2-Chloroethyl Ether [C]	111-44-4	---	<5	d	A
Bis 2-Chloroisopropyl Ether	108-60-1	---	<5	d	A
Bis-2-Ethylhexyl Phthalate [C]	117-81-7	10.0	<5	d	A
Butyl benzyl phthalate	85-68-7	10.0	<5	d	A
2-Chloronaphthalene	91-58-7	---	<5	d	A
Chrysene [C]	218-01-9	10.0	<5	d	A
Dibenz(a,h)anthracene [C]	53-70-3	20.0	<5	d	A
1,2-Dichlorobenzene	95-50-1	10.0	<5	d	A
1,3-Dichlorobenzene	541-73-1	10.0	<5	d	A
1,4-Dichlorobenzene	106-46-7	10.0	<5	d	A
3,3-Dichlorobenzidine [C]	91-94-1	---	<5	d	A
Diethyl phthalate	84-66-2	10.0	<5	d	A
Dimethyl phthalate	131-11-3	---	<5	d	A
Di-n-Butyl Phthalate	84-74-2	10.0	<5	e	A
2,4-Dinitrotoluene	121-14-2	10.0	<5	d	A
1,2-Diphenylhydrazine [C]	122-66-7	---	<5	d	A
Fluoranthene	206-44-0	10.0	<5	d	A
Fluorene	86-73-7	10.0	<5	d	A
Hexachlorobenzene [C]	118-74-1	---	<5	d	A
Hexachlorobutadiene [C]	87-68-3	---	<5	d	A
Hexachlorocyclopentadiene	77-47-4	---	<5	d	A
Hexachloroethane [C]	67-72-1	---	<5	d	A
Indeno(1,2,3-cd)pyrene [C]	193-39-5	20.0	<5	d	A
Isophorone [C]	78-59-1	10.0	<5	d	A
Nitrobenzene	98-95-3	10.0	<5	d	A
N-Nitrosodimethylamine [C]	62-75-9	---	<5	d	A
N-Nitrosodi-n-propylamine [C]	621-64-7	---	<5	d	A
N-Nitrosodiphenylamine [C]	86-30-6	---	<5	d	A
Pyrene	129-00-0	10.0	<5	d	A
1,2,4-Trichlorobenzene	120-82-1	10.0	<5	d	A

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
VOLATILES					
Acrolein	107-02-8	---	<50	d	A
Acrylonitrile [C]	107-13-1	---	<50	d	A
Benzene [C]	71-43-2	10.0	<5	d	A
Bromoform [C]	75-25-2	10.0	<5	d	A
Carbon Tetrachloride [C]	56-23-5	10.0	<5	d	A
Chlorobenzene	108-90-7	50.0	<5	d	A
Chlorodibromomethane [C]	124-48-1	10.0	<5	d	A
Chloroform	67-66-3	10.0	52	d	B.1
Dichlorobromomethane [C]	75-27-4	10.0	<5	d	A
1,2-Dichloroethane [C]	107-06-2	10.0	<5	d	A
1,1-Dichloroethylene	75-35-4	10.0	<5	d	A
1,2-trans-dichloroethylene	156-60-5	---	<5	d	A
1,2-Dichloropropane [C]	78-87-5	---	<5	d	A
1,3-Dichloropropene [C]	542-75-6	---	<5	d	A
Ethylbenzene	100-41-4	10.0	<5	d	A
Methyl Bromide	74-83-9	---	<10	d	A
Methylene Chloride [C]	75-09-2	20.0	<5	d	A
1,1,2,2-Tetrachloroethane [C]	79-34-5	---	<5	d	A
Tetrachloroethylene	127-18-4	10.0	<5	d	A
Toluene	10-88-3	10.0	<5	d	A
1,1,2-Trichloroethane [C]	79-00-5	---	<5	d	A
Trichloroethylene [C]	79-01-6	10.0	<5	d	A
Vinyl Chloride [C]	75-01-4	10.0	<10	d	A
RADIONUCLIDES					
Beta Particle & Photon Activity (mrem/yr)	N/A	---	Applicable to PWS waters only	---	---
Combined Radium 226 and 228 (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Gross Alpha Particle Activity (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Uranium	N/A	---	Applicable to PWS waters only	---	---
ACID EXTRACTABLES					
2-Chlorophenol	95-57-8	10.0	<5	d	A
2,4-Dichlorophenol	120-83-2	10.0	<5	d	A
2,4-Dimethylphenol	105-67-9	10.0	<5	d	A
2,4-Dinitrophenol	51-28-5	---	<20	d	A
2-Methyl-4,6-Dinitrophenol	534-52-1	---	<5	d	A
Nonylphenol	104-40-51	---	<10.5	b	A
Pentachlorophenol [C]	87-86-5	50.0	<10	d	A
Phenol	108-95-2	10.0	<5	d	A
2,4,6-Trichlorophenol [C]	88-06-2	10.0	<5	d	A
MISCELLANEOUS					
Ammonia-N (mg/L)	766-41-7	0.2 mg/L	<0.2 (89 data), 0.23, 6.59, 0.57, 5.56, 1.32, 7.37, 3.23, 1.28, 0.90, 3.51	c	C.1

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Chloride (mg/L)	16887-00-6	---	108	d	C.1
TRC (mg/L)	7782-50-5	0.1 mg/L	**Default = 20 mg/L**	---	---
Cyanide, Free	57-12-5	10.0	<5	d	A
2,4-Dichlorophenoxy acetic acid (synonym = 2,4-D)	94-75-7	---	Applicable to PWS waters only	---	---
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin)(ppq)	1746-01-6	0.01	Applicable to Paper Mills & Oil Refineries only	---	---
Foaming Agents (as MBAS)	N/A	---	Applicable to PWS waters only	---	---
Sulfide, dissolved	18496-25-8	100	NEW REQUIREMENT. TESTING REQUIRED.	---	---
Nitrate as N (mg/L)	14797-55-8	---	Applicable to PWS waters only	---	---
Sulfate (mg/L)	N/A	---	Applicable to PWS waters only	---	---
Total Dissolved Solids (mg/L)	N/A	---	Applicable to PWS waters only	---	---
Tributyltin	60-10-5	---	<0.025	d	A
2-(2,4,5-Trichlorophenoxy) propionic acid (synonym = Silvex)	93-72-1	---	Applicable to PWS waters only	---	---
Hardness (mg/L as $CaCO_3$)	471-34-1	---	228	d	---

The **superscript "C"** following the parameter name indicates that the substance is a known or suspected carcinogen; human health criteria at risk level 10^{-5}.

CASRN = Chemical Abstract Service Registry Number for each parameter is referenced in the current Water Quality Standards. A unique numeric identifier designating only one substance. The Chemical Abstract Service is a division of the American Chemical Society.

"Source of Data" codes:
a = default effluent concentration
b = Attachment A monitoring received 9.6.2013
c = DMR logs June 2012 – April 2014
d = 2009 Fact Sheet
e = Attachment A monitoring report received on 6.30.2009

"Data Evaluation" codes:
See section titled PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS for an explanation of the code used.

STAT.EXE RESULTS:

1.10 MGD Permitted Flow Tier (Outfall 001):

Chemical = Ammonia-N
Chronic averaging period = 30
WLAa = 24
WLAc = 3.1
Q.L. = 0.2
# samples/mo. = 20
# samples/wk. = 5 *

Summary of Statistics:

observations = 99
Expected Value = .336642
Variance = .090439
C.V. = 0.893326
97th percentile daily values = 1.06044
97th percentile 4 day average = .685626
97th percentile 30 day average= .439920
< Q.L. = 0
Model used = lognormal

No Limit is required for this material

The data are: 0.2 (89 data,0.23, 6.59, 0.57, 5.56, 1.32, 7.37, 3.23
1.28, 0.9, 3.51

Stat.exe Results – 1.52 MGD Design Flow Tier (Outfall 001):

Chemical = Ammonia-N
Chronic averaging period = 30
WLAa = 24
WLAc = 2.9
Q.L. = 0.2
# samples/mo. = 20
# samples/wk. = 5 *

Summary of Statistics:

observations = 99
Expected Value = .336642
Variance = .090439
C.V. = 0.893326
97th percentile daily values = 1.06044
97th percentile 4 day average = .685626
97th percentile 30 day average= .439920
< Q.L. = 0
Model used = lognormal

No Limit is required for this material

The data are: 0.2 (89 data), 0.23, 6.59, 0.57, 5.56, 1.32, 7.37, 3.23
1.28, 0.9, 3.51

* Baseline monitoring frequency of 5/Week for Ammonia-N used in the evaluation per Guidance Memo No. 14-2003.

Stat.exe Results – 1.52 MGD Design Flow Tier (Outfall 001):

Chemical = Copper Chronic averaging period = 4 WLAa = 38 WLAc = 24 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 5 Variance = 9 C.V. = 0.6 97th percentile daily values = 12.1670 97th percentile 4 day average = 8.31895 97th percentile 30 day average= 6.03026 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 5	Chemical = Lead Chronic averaging period = 4 WLAa = 440 WLAc = 52 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 5 Variance = 9 C.V. = 0.6 97th percentile daily values = 12.1670 97th percentile 4 day average = 8.31895 97th percentile 30 day average= 6.03026 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 5
Chemical = Nickel Chronic averaging period = 4 WLAa = 470 WLAc = 55 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 5 Variance = 9 C.V. = 0.6 97th percentile daily values = 12.1670 97th percentile 4 day average = 8.31895 97th percentile 30 day average= 6.03026 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 5	Chemical = Silver Chronic averaging period = 4 WLAa = 18 WLAc = Q.L. = 0.2 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 1 Variance = .36 C.V. = 0.6 97th percentile daily values = 2.43341 97th percentile 4 day average = 1.66379 97th percentile 30 day average= 1.20605 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 1

Stat.exe Results – 1.52 MGD Design Flow Tier (Outfall 001):

Chemical = Arsenic Chronic averaging period = 4 WLAa = 440 WLAc = 200 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 5 Variance = 9 C.V. = 0.6 97th percentile daily values = 12.1670 97th percentile 4 day average = 8.31895 97th percentile 30 day average= 6.03026 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 5	Chemical = Cadmium Chronic averaging period = 4 WLAa = 13 WLAc = 2.9 Q.L. = 0.3 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = .5 Variance = .09 C.V. = 0.6 97th percentile daily values = 1.21670 97th percentile 4 day average = .831895 97th percentile 30 day average= .603026 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 0.5
Chemical = Chromium III Chronic averaging period = 4 WLAa = 1400 WLAc = 200 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 3 Variance = 3.24 C.V. = 0.6 97th percentile daily values = 7.30025 97th percentile 4 day average = 4.99137 97th percentile 30 day average= 3.61815 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 3	Chemical = Chromium VI Chronic averaging period = 4 WLAa = 21 WLAc = 15 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 3 Variance = 3.24 C.V. = 0.6 97th percentile daily values = 7.30025 97th percentile 4 day average = 4.99137 97th percentile 30 day average= 3.61815 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 3

Stat.exe Results – 1.52 MGD Design Flow Tier (Outfall 001):

Chemical = Zinc Chronic averaging period = 4 WLAa = 300 WLAc = 320 Q.L. = 2 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 57 Variance = 1169.64 C.V. = 0.6 97th percentile daily values = 138.704 97th percentile 4 day average = 94.8360 97th percentile 30 day average= 68.7450 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 57	Chemical = Chloride Chronic averaging period = 4 WLAa = 1100 WLAc = 310 Q.L. = 0 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 108 Variance = 4199.04 C.V. = 0.6 97th percentile daily values = 262.809 97th percentile 4 day average = 179.689 97th percentile 30 day average= 130.253 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 108

Stat.exe utilized to determine the Chronic WLA that would result in the monthly average Ammonia-N limit of 4.066 mg/L at Outfall 001. The calculated WLA of 3.9 mg/L was used to set the modeled TKN.

Chronic averaging period = 30
WLAa =
WLAc = 3.9
Q.L. = 0.2
# samples/mo. = 20
# samples/wk. = 5

Summary of Statistics:

observations = 1
Expected Value = 4
Variance = 5.76
C.V. = 0.6
97th percentile daily values = 9.73367
97th percentile 4 day average = 6.65516
97th percentile 30 day average= 4.82421
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 7.86891336432361
Average Weekly Limit = 5.12862975258039
Average Monthly Limit = 4.0497501758086

The data are: 4

WHOLE EFFLUENT TOXICITY (WET) EVALUATION:

Applicability of TMP: The applicability criteria for a facility to perform toxicity testing is contained in the Departments Guidance Memo No. 00-2012, Toxics Management Program Implementation Guidance, 08/24/00, Part IV. The Standard Industrial Code (SIC) for VPGC, LLC is 2015, Poultry Slaughtering and Processing which is included in Appendix A of the TMP Guidance. In addition, the the Instream Waste Concentration (IWC) is greater than or equal to 33% (GM 00-2012, Sections IV.1.A. and IV.1.B, respectively).

Monitoring Location: Toxicity monitoring is conducted at Outfall 001 which is a combination of the final treated effluent from the industrial WWTP and the final treated effluent from the sanitary WWTP.

Flow Tiers: The final discharge from Outfall 101 (sanitary WWTP) is combined with the final discharge from Outfall 102 (industrial WWTP) and discharged through Outfall 001. In previous permits, the WET evaluation was based on flow tiers of 1.1 MGD and 1.5 MGD (based on the permit application) and was thought to include both the sanitary and industrial WWTPs.

In the 2014 permit, the toxicity evaluation for Outfall 001 has been based on Outfall 001 flows of 1.10 MGD and 1.52 MGD which take into account the combined flows. If the permittee goes to the 1.52 MGD flow tier, there is no need to re-characterize the wastewater since the 1.5 MGD industrial WWTP is already built.

Summary of Toxicity Testing: The previous permit required annual chronic testing using *Ceriodaphnia dubia* and *Pimephales promelas*. Tables 1 and 2 contain a summary of the toxicity testing results during the term of the permit. These data were evaluated using the procedures outlined in the TMP guidance.

History of WET Limits: WET limits have been in the permit as far back as the December 12, 1999 permit reissuance. Over the years there have been numerous changes of ownership and numerous plant changes and upgrades. A major plant upgrade was completed in October 2004. The permittee changed from chlorine disinfection to UV disinfection in 2009/2010. Another major plant upgrade occurred in 2010/2011 when the industrial WWTP was upgraded to meet TP technology limits. Despite the improvements in the WWTP, when the toxicity monitoring data have been evaluated, the results indicate the need to continue the WET limits. While the toxicity data "passed" (i.e. were less than the TUc limit), the records do not show that there has been an effort to find the source of the toxicity and eliminate it. If the cause of toxicity can be identified and changes made to eliminate it are successful, then the WET limit may be eliminated or the monitoring frequency can be reduced.

Rationale for Acute Toxicity Testing:

Ceriodaphnia dubia:

Table 1 indicates that the toxicity sample collected on June 12, 2012 showed acute toxicity to *Ceriodaphnia dubia*. The TUc was 1.96 which "passed" (was under the TUc permit limit of 2.17). This chronic test also indicated acute toxicity. The 48-hour LC_{50} was 100 and the percent survival in 100% effluent was 50%. This is enough toxicity to trigger the permittee to begin acute toxicity testing. If the permittee identifies the cause of the toxicity and then eliminates it, this can be reevaluated.

Pimephales promelas:

Table 2 indicates that the 48-hour LC_{50} was › 100% in all of the chronic toxicity tests of the current permit term for *Pimephales promelas*; therefore, annual chronic monitoring has been continued at this reissuance. The permit contains language that should chronic WET monitoring for *Pimephales promelas* result in a 48-hour $LC_{50} \leq 100\%$ effluent, the permittee must commence acute toxicity testing.

Sample Type: A sample type of 24 hour composite is representative of the discharge.

Monitoring Period: The previous permit specified a sampling period of April – June of each year for conducting toxicity testing based on periods of increased production. Increased production appears to be linked to feed costs; therefore, no monitoring period has been specified at this reissuance.

Rationale for Monitoring Frequency: A review of the files shows that in the December 13, 2004 reissuance, the permittee requested that the WET monitoring be reduced from 1/Quarter to 1/Year. The rationale was that there was a major upgrade to the industrial WWTP in October 2002 and that the toxicity tests were all under the TUc limit of 2.08. When the permit was reissued in December 1, 2009, the 1/Year monitoring was carried forward. While all of the toxicity data "passed" (i.e. were less than the TUc limit), the evaluation indicated that WET limits were still required.

For facilities with WET limits, quarterly monitoring is typically required. If the permittee has no toxicity shown over the permit term (as opposed to just meeting the TUc limit), then consideration may be given to reducing the monitoring frequency. Since both acute and chronic toxicity was found in the *Ceriodaphnia dubia* toxicity tests, quarterly monitoring has been reinstated at this reissuance. The annual chronic monitoring for *Pimephales promelas* indicated no toxicity, so the annual monitoring frequency has been carried forward.

Evaluation of Acute Instream Waste Concentration (IWCa): The Acute IWC for both flow tiers is greater than 33% (see Tables 3-5)l; therefore, the acute toxicity criteria is NOAEC = 100% test/endpoint for use.

Calculation of WLAs: Acute and chronic WLAs were generated from the WETLimit10.xls spreadsheet by entering the design flow, stream flows and stream mix percentages for the respective stream flows.

Dilution Series: The chronic dilution series that are being recommended are contained in Tables 3 and 4. The acute dilution series recommended is the standard dilution series.

Stat.exe Limit Evaluation: The WLAs are used in the Department's Stat.exe program in order to perform a statistical evaluation of the acute and chronic test results expressed as Toxicity Units (TUs). The toxicity data are analyzed separately by species and test type (acute or chronic).

Chronic Stat.exe Limit Evaluation: The summary of the chronic toxicity testing data for *Ceriodaphnia dubia* are shown in Table 1. The results of the Stat.exe evaluation are shown in Table 5. Based on the evaluation of the chronic toxicity data, a WET limit is required.

A summary of the chronic toxicity testing data for *Pimephales promelas* are shown in Table 2. Because the chronic toxicity data for *Pimephales promelas* were all TUc =1, they were not run through Stat.exe. The data indicate that a limit is not needed, but the existing TUc limit of 2.17 for the 1.10 MGD flow tier and TUc = 1.96 for the 1.52 MGD flow tier have been carried forward based on antibacksliding.

Midpoint Check Stat.exe Evaluation: Because the permit contains WET limits, a midpoint check is not necessary.

Outfalls 002, 003, 004 and 005: Toxics monitoring of these outfalls is not required as the discharges do not meet the Applicability Criteria for a facility to perform toxicity testing.

Peer Reviewer: *Dawn Jeffries*
June 19, 2014

Table 1
Summary of Chronic Toxicity Testing for *Ceriodaphnia dubia*

Monitoring Period	Test Date	Chronic 3-Brood Static Renewal Survival and Reproduction *Ceriodaphnia dubia*		48-hr LC_{50}	% Survival in 100% Effluent
		Survival (TUc)	Reproduction (TUc)		
1st Annual	05/12/10	1.0	1.0	>100	90
2nd Annual	06/15/11	1.96	1.96	>100	40
3rd Annual	06/20/12	1.0	1.96	100	50
4th Annual	06/26/13	1.0	1.0	>100	100
5th Annual	06/11/14	1.0	1.0	>100	100

Table 2
Summary of Chronic Toxicity Testing for *Pimephales promelas*

Monitoring Period	Test Date	Chronic 3-Brood Static Renewal Survival and Growth *Pimephales promelas*		48-hr LC_{50}	% Survival in 100% Effluent
		Survival (TUc)	Growth (TUc)		
1st Annual	05/12/10	1.0	1.0	>100	95
2nd Annual	06/15/11	1.0	1.0	>100	95
3rd Annual	06/20/12	1.0	1.0	>100	100
4th Annual	06/26/13	1.0	1.0	>100	90
5th Annual	06/11/14	1.0	1.0	>100	87.5

Note: Outfall 001 sampling prior to June 2012 was collected at the final discharge from the industrial WWTP. Outfall 001 sampling from June 2012 to present has been collected at the combined discharge of the industrial WWTP and sanitary WWTP; therefore, toxicity data prior to June 2012 was not used in the evaluation.

Table 3 - WETLim10.xls Spreadsheet – 1.10 MGD

Spreadsheet for determination of WET test endpoints or WET limits

Excel 97
Revision Date: 12/13/13
File: WETLIM10.xls
(MIX.EXE required also)

Acute Endpoint/Permit Limit — **Use as LC_{50} in Special Condition, as TUa on DMR**

ACUTE	100% =	NOAEC	LC_{50} =	NA	% Use as	NA	TUa

ACUTE WLAa 0.42463636

Note: Inform the permittee that if the mean of the data exceeds this TUa: 1.0 a limit may result using STATS.EXE

Chronic Endpoint/Permit Limit — **Use as NOEC in Special Condition, as TUc on DMR**

CHRONIC	2.17524744	TU_c	NOEC =	46	% Use as	2.17	TU_c
BOTH*	4.24636374	TU_c	NOEC =	24	% Use as	4.16	TU_c
AML	2.17524744	TU_c	NOEC =	46	% Use as	2.17	TU_c

Enter data in the cells with blue type:

ACUTE WLAa,c 4.24636364
CHRONIC WLAc 1.48727273
* Both means acute expressed as chronic

Note: Inform the permittee that if the mean of the data exceeds this TUc: 1.0 a limit may result using STATS.EXE

Entry Date:	08/25/14				
Facility Name:	VPGC, LLC				
VPDES Number:	VA0002313				
Outfall Number:	001				
			% Flow to be used from MIX.EXE	**Diffuser /modeling study?**	
Plant Flow:	1.1	MGD		Enter Y/N	n
Acute 1Q10:	0.457	MGD	100 %	Acute	1 :1
Chronic 7Q10:	0.536	MGD	100 %	Chronic	1 :1

Are data available to calculate CV? (Y/N) N (Minimum of 10 data points, same species, needed) Go to Page 2
Are data available to calculate ACR? (Y/N) N (NOEC<LC50, do not use greater/less than data) Go to Page 3

IWC_a	70.64868337	%	Plant flow/plant flow + 1Q10
IWC_c	67.23716381	%	Plant flow/plant flow + 7Q10

NOTE: If the IWCa is >33%, specify the NOAEC = 100% test/endpoint for use

Dilution, acute	1.415454545	100/IWCa
Dilution, chronic	1.487272727	100/IWCc

WLA_a	0.424636364	Instream criterion (0.3 TUa) X's Dilution, acute
WLA_c	1.487272727	Instream criterion (1.0 TUc) X's Dilution, chronic
$WLA_{a,c}$	4.246363636	ACR X's WLA_a - converts acute WLA to chronic units

ACR -acute/chronic ratio	10		LC50/NOEC (Default is 10 - if data are available, use tables Page 3)
CV-Coefficient of variation	0.6		Default of 0.6 - if data are available, use tables Page 2)
Constants	eA	0.4109447	Default = 0.41
	eB	0.6010373	Default = 0.60
	eC	2.4334175	Default = 2.43
	eD	2.4334175	Default = 2.43 (1 samp)

No. of samples 1

****The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.**

$LTA_{a,c}$	1.745020631	WLAa,c X's eA							
LTA_c	0.893906384	WLAc X's eB						Rounded NOEC's	%
MDL** with $LTA_{a,c}$	4.24636374	TU_c	NOEC =	23.549561	(Protects from acute/chronic toxicity)			NOEC = 24	%
MDL** with LTA_c	2.175247439	TU_c	NOEC =	45.971782	(Protects from chronic toxicity)			NOEC = 46	%
AML with lowest LTA	2.175247439	TU_c	NOEC =	45.971782	Lowest LTA X's eD			NOEC = 46	

IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a

								Rounded LC50's	%
MDL with $LTA_{a,c}$	0.424636374	TU_a	LC50 =	235.495605	%	Use NOAEC=100%		LC50 = NA	%
MDL with LTA_c	0.217524744	TU_a	LC50 =	459.717815	%	Use NOAEC=100%		LC50 = NA	

CHRONIC DILUTION SERIES TO RECOMMEND

1.10 MGD Flow	Monitoring % Effluent	Monitoring TUc	Limit % Effluent	Limit TUc
Dilution series based on data mean	100	1.000000		
Dilution series to use for limit			46	2.17
Dilution factor to recommend:	0.5		0.678232998	
Dilution series to recommend:	100.0	1.00	100.0	1.00
	50.0	2.00	67.8	1.47
	25.0	4.00	46.0	2.17
	12.5	8.00	31.2	3.21
	6.3	16.00	21.2	4.73
Extra dilutions if needed	3.12	32.05	14.35	6.97
	1.56	64.10	9.73	10.27

Table 4
WETLim10.xls Spreadsheet – 1.52 MGD

Spreadsheet for determination of WET test endpoints or WET limits

Excel 97				Acute Endpoint/Permit Limit			Use as LC_{50} in Special Condition, as TUa on DMR					
Revision Date: 12/13/13												
File: WETLIM10.xls				ACUTE	100% =	NOAEC	LC_{50} =	NA	% Use as	NA	TUa	
(MIX.EXE required also)												
				ACUTE WLAa		0.39019737	Note: Inform the permittee that if the mean of the data exceeds					
							this TUa:	1.0	a limit may result using STATS.EXE			
				Chronic Endpoint/Permit Limit			Use as NOEC in Special Condition, as TUc on DMR					
				CHRONIC	1.9783247	TU_c	NOEC =	51	% Use as	1.96	TU_c	
				BOTH*	3.90197378	TU_c	NOEC =	26	% Use as	3.84	TU_c	
Enter data in the cells with blue type:				AML	1.9783247	TU_c	NOEC =	51	% Use as	1.96	TU_c	
Entry Date:		02/27/14		ACUTE WLAa,c		3.90197368		Note: Inform the permittee that if the mean				
Facility Name:		VPGC, LLC		CHRONIC WLAc		1.35263158		of the data exceeds this TUc:		1.0		
VPDES Number:		VA0002313		* Both means acute expressed as chronic				a limit may result using STATS.EXE				
Outfall Number:		001										
				% Flow to be used from MIX.EXE				Diffuser /modeling study?				
Plant Flow:		1.52	MGD					Enter Y/N	n			
Acute 1Q10:		0.457	MGD	100	%			Acute	1	:1		
Chronic 7Q10:		0.536	MGD	100	%			Chronic	1	:1		
Are data available to calculate CV? (Y/N)				N	(Minimum of 10 data points, same species, needed)					Go to Page 2		
Are data available to calculate ACR? (Y/N)				N	(NOEC<LC50, do not use greater/less than data)					Go to Page 3		
IWC_a		76.88416793	%	Plant flow/plant flow + 1Q10			NOTE: If the IWCa is >33%, specify the					
IWC_c		73.92996109	%	Plant flow/plant flow + 7Q10			NOAEC = 100% test/endpoint for use					
Dilution, acute		1.300657895		100/IWCa								
Dilution, chronic		1.352631579		100/IWCc								
WLA_a		0.390197368		Instream criterion (0.3 TUa) X's Dilution, acute								
WLA_c		1.352631579		Instream criterion (1.0 TUc) X's Dilution, chronic								
$WLA_{a,c}$		3.901973684		ACR X's WLA_a - converts acute WLA to chronic units								
ACR -acute/chronic ratio		10		LC50/NOEC (Default is 10 - if data are available, use tables Page 3)								
CV-Coefficient of variation		0.6		Default of 0.6 - if data are available, use tables Page 2)								
Constants	eA	0.4109447		Default = 0.41								
	eB	0.6010373		Default = 0.60								
	eC	2.4334175		Default = 2.43								
	eD	2.4334175		Default = 2.43 (1 samp)	No. of samples	1	**The Maximum Daily Limit is calculated from the lowest					
							LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.					
$LTA_{a,c}$		1.603495405		WLAa,c X's eA								
LTA_c		0.812982032		WLAc X's eB						Rounded NOEC's		%
MDL** with $LTA_{a,c}$		3.90197378	TU_c	NOEC =	25.628055	(Protects from acute/chronic toxicity)				NOEC =	26	%
MDL** with LTA_c		1.978324704	TU_c	NOEC =	50.547819	(Protects from chronic toxicity)				NOEC =	51	%
AML with lowest LTA		1.978324704	TU_c	NOEC =	50.547819	Lowest LTA X's eD				NOEC =	51	
IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a												
										Rounded LC50's		%
MDL with $LTA_{a,c}$		0.390197378	TU_a	LC50 =	256.280553	%	Use NOAEC=100%			LC50 =	NA	%
MDL with LTA_c		0.19783247	TU_a	LC50 =	505.478195	%	Use NOAEC=100%			LC50 =	NA	

CHRONIC DILUTION SERIES TO RECOMMEND					
1.52 MGD Flow		Monitoring		Limit	
		% Effluent	TUc	% Effluent	TUc
Dilution series based on data mean		100	1.000000		
Dilution series to use for limit				51	1.96
Dilution factor to recommend:		0.5		0.714142843	
Dilution series to recommend:		100.0	1.00	100.0	1.00
		50.0	2.00	71.4	1.40
		25.0	4.00	51.0	1.96
		12.5	8.00	36.4	2.75
		6.3	16.00	26.0	3.84
	Extra dilutions if needed	3.12	32.05	18.57	5.38
		1.56	64.10	13.27	7.54

Table 5
Stat.exe Results

Facility = VPGC, LLC 1.10 MGD Chemical = WET Chronic C. dubia Chronic averaging period = 4 WLAa,c = 4.24636364 WLAc = 1.48727273 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 5 Expected Value = 1.384 Variance = .689564 C.V. = 0.6 97th percentile daily values = 3.36784 97th percentile 4 day average = 2.30268 97th percentile 30 day average= 1.66917 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data A limit is needed based on Chronic Toxicity Maximum Daily Limit = 2.17524759190801 Average Weekly Limit = 2.17524759190801 Average Monthly Limit = 2.17524759190801 The data are: 1.96, 1.96, 1,1,1	Facility = VPGC, LLC 1.52 MGD Chemical = WET Chronic C. dubia Chronic averaging period = 4 WLAa,c = 3.90197368 WLAc = 1.35263158 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 5 Expected Value = 1.384 Variance = .689564 C.V. = 0.6 97th percentile daily values = 3.36784 97th percentile 4 day average = 2.30268 97th percentile 30 day average= 1.66917 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data A limit is needed based on Chronic Toxicity Maximum Daily Limit = 1.97832484102208 Average Weekly Limit = 1.97832484102208 Average Monthly Limit = 1.97832484102208 The data are:1.96, 1.96, 1, 1, 1

Note: The WET limit of 2.17 from Table 3 and WET limit of 1.96 from Table 4 is used rather than those determined by this Stat.exe program. Differences are due to the number of observations, which affects the CV in this program in ways that may not be accurate for toxicity tests.

APPENDIX D

BASES FOR PERMIT SPECIAL CONDITIONS

Tabulated below are the sections of the permit, with any changes and the reasons for the changes identified. Also provided is the basis for each of the permit special conditions.

Cover Page

- Content and format as prescribed by the VPDES Permit Manual.
- Outfalls 004 and 005 were added.

Part I.A.1

Effluent Limitations and Monitoring Requirements – Outfall 001 – 1.10 MGD Permitted Flow Tier: Bases for effluent limits provided in previous pages of this fact sheet. Monitoring requirements as prescribed by the VPDES Permit Manual.

Updates Part I.A.1 of the previous permit with the following:

- Monitoring requirements for Flow were changed from Continuous TIRE to once per month Calculated.
- Effluent limits and monitoring for E. coli, Fecal Coliform, Ammonia-N and Oil and Grease were removed (they were moved to apply at Outfall 102).
- The introductory language was revised.
- The monthly average BOD_5 concentration limit was changed from 15 mg/L to 16 mg/L.
- The monthly average BOD_5 loading limit was changed from 62 kg/d to 67 kg/d.
- The monthly average TSS concentration limit was changed from 20 mg/L to 19 mg/L.
- The monthly average TSS loading limit was changed from 83 kg/d to 79 kg/d.
- The footnote regarding Oil and Grease measured as n-hexane extractable material was removed from Outfall 001 and the footnote was moved to Outfall 102.
- Footnotes defining the submittal dates for parameters with monitoring frequencies of 1/3Months, 2/Month and 1/Year were added.
- TKN limits were added.

Part I.A.2

Effluent Limitations and Monitoring Requirements – Outfall 001 – 1.52 MGD Design Flow Tier:

Bases for effluent limits provided in previous pages of this fact sheet. Monitoring requirements as prescribed by the VPDES Permit Manual. *Updates Part I.A.2 of the previous permit with the following*:

- Monitoring requirements for Flow were changed from Continuous TIRE to once per month Calculated.
- Effluent limits and monitoring for E. coli, Fecal Coliform, Ammonia-N and Oil and Grease were removed (they were moved to apply at Outfall 102).
- The introductory language was revised.
- The monthly average BOD_5 loading limit was changed from 79 kg/d to 80 kg/d.
- The monthly average TSS concentration limit was changed from 20 mg/L to 14 mg/L.
- The monthly average TSS loading limit was changed from 110 kg/d to 80 kg/d.
- The maximum TSS limit concentration limit was changed from 30 mg/L to 28 mg/L.
- The maximum TSS limit loading limit was changed from 170 kg/d to 160 kg/d.
- The maximum Nitrate loading limit was changed from 120 kg/d to 130 kg/d.
- The monthly average TN loading limit was changed from 580 kg/d to 590 kg/d.
- The daily maximum TN loading limit was changed from 830 kg/d to 840 kg/d.
- The footnote regarding Oil and Grease measured as n-hexane extractable material was removed from Outfall 001 and the footnote was moved to Outfall 102.
- Footnotes defining the submittal dates for parameters with monitoring frequencies of 1/3Months, 2/Month and 1/Year were added.
- TKN limits were added.

Part I.A.3 **Effluent Limitations and Monitoring Requirements – Outfall 101 (STP):** Bases for effluent limits provided in previous pages of this fact sheet. Monitoring requirements as prescribed by the VPDES Permit Manual.
Updates Part I.A.3 of the previous permit with the following:

- The monitoring frequency for E. coli was changed from 1/Week to 4/Month.
- The monitoring frequency for pH was changed from 1/Month to 1/Year.

Part I.A.4 **Effluent Limitations and Monitoring Requirements – Outfall 102 (Industrial WWTP) – 1.08 MGD Permitted Flow Tier:** Bases for effluent limits provided in previous pages of this fact sheet. Monitoring requirements as prescribed by the VPDES Permit Manual. *New requirement.*

Part I.A.5 **Effluent Limitations and Monitoring Requirements – Outfall 102 (Industrial WWTP) – 1.5 MGD Design Flow Tier:** Bases for effluent limits provided in previous pages of this fact sheet. Monitoring requirements as prescribed by the VPDES Permit Manual. *New requirement.*

Part I.A.6 **Effluent Limitations and Monitoring Requirements – Outfalls 002, 003 and 005:** Bases for effluent limits provided in previous pages of this fact sheet. Monitoring requirements as prescribed by the VPDES Permit Manual. *Updates Part I.A.4 of the previous permit.* Outfall 005 was added.

Part I.A.7 **Effluent Limitations and Monitoring Requirements – Outfall 004:** Bases for effluent limits provided in previous pages of this fact sheet. Monitoring requirements as prescribed by the VPDES Permit Manual. *New requirement.* Nonsignificant dischargers are subject to aggregate wasteload allocation for TN, TP and sediments under the TMDL for the Chesapeake Bay. Monitoring of TN and TP is required in order to verify the aggregate WLAs.

Part I.B **Effluent Limitations and Monitoring Requirements – Additional Instructions:** *Updates Part I.C of the previous permit with minor wording changes. Also, the QL for BOD_5 was changed from 5 mg/L to 2 mg/L, the QL for TKN was added, and Part I.B.2.f was added to address the TP limit.* Authorized by VPDES Permit Regulation, 9VAC25-31-190.J.4 and 220.I. This condition is necessary when a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

Part I.C **Whole Effluent Toxicity (WET) Requirements:** *Updates Part I.D of the previous permit*. VPDES Permit Regulation, 9VAC25-31-210 and 220.I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act.

Part I.D.1 **95% Capacity Reopener (Outfalls 101 and 102):** *Updates Part I.E.1 of the previous permit with minor wording changes.* Required by VPDES Permit Regulation, 9VAC25-31-200.B.4 for certain permits. Included for this facility to ensure that adequate treatment capacity will continue to be provided as influent flows and/or loadings increase.

Part I.D.2 **Materials Handling/Storage:** *Updates Part I.E.2 of the previous permit with minor wording changes*. 9VAC25-31-280.B.2. requires that the types and quantities of "wastes, fluids, or pollutants which are … treated, stored, etc." be addressed for all permitted facilities.

Part I.D.3 **O&M Manual Requirement:** *Updates Part I.E.3 of the previous permit with changes to what is required to be included in the O&M Manual.* Required by Code of Virginia 62.1-44.19, SCAT Regulations 9VAC25-790, and VPDES Permit Regulation 9VAC25-31-190.E for all STPs and included for this facility per BPJ.

Part I.D.4 **Certificate to Construct (CTC)/Certificate to Operate (CTO) Requirement (Outfall 101):** *Updates Part I.E.5 of the previous permit with minor wording changes.* Required by Code of Virginia 62.1-44.19, SCAT Regulations 9VAC25-790, and VPDES Permit Regulation 9VAC25-31-190.E for all STPs

Part I.D.5 **Concept Engineering Report (CER) Requirement (Outfall 102):** *Updates Part I.E.4 of the previous permit with minor wording changes.* Section 62.1-44.16 of the Code of Virginia requires industrial facilities to obtain DEQ approval for proposed discharges of industrial wastewater. A CER means a document setting forth preliminary concepts or basic information for the design of industrial wastewater treatment facilities and the supporting calculations for sizing the treatment operations.

Part I.D.6 **Sludge Management Plan (SMP) Requirement (Outfall 101):** *Updates Part I.E.6 of the previous permit with minor wording changes.* VPDES Permit Regulation 9VAC25-31-100.P, 220.B.2, and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements are derived from the Virginia Pollution Abatement Permit Regulation (9VAC25-32-10 *et seq.*)

Part I.D.7 **Licensed Operator Requirement (Outfall 102):** *Updates Part I.E.7 of the previous permit with minor wording changes.* The VPDES Permit Regulation 9VAC25-31-200 C, the Code of Virginia 54.1-2300 et seq., and Rules and Regulations for Waterworks and Wastewater Works Operators 18 VAC 160-20-10 et seq., require licensure of operators. The licensed operator requirements apply to wastewater treatment works based on the maximum 30-day average flow and treatment type. A class II license is indicated for this facility.

Part I.D.8 **Reliability Class (Outfall 101):** *Updates Part I.E.8 of the previous permit with minor wording changes.* Required by SCAT Regulations 9VAC25-790. Class II status was recommended by VDH for the STP at this facility on July 23, 2002.

Part I.D.9 **Water Quality Criteria Monitoring:** *Identical to Part I.E.9 of the previous permit.* State Water Control Law at 62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, Subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachment A of this VPDES permit.

Part I.D.10 **Treatment Works Closure Plan:** *Updates Part I.E.10 of the previous permit with minor wording changes.* Required for all STPs per the State Water Control Law at 62.1-44.18.C and 62.1-44.15:1.1, and the SCAT Regulations at 9VAC25-790-450.E and 9VAC25-790-120.E.3.

Part I.D.11 **Reopeners:**

a. *Identical to Part I.E.11.a of the previous permit:* Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

b. *Identical to Part I.E.11.b of the previous permit:* 9VAC25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

c. *Updates Part I.E.11.c of the previous permit with minor wording changes.* 9VAC25-31-390.A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

d. Identical to Part I.E.11.d of the previous permit Required by the VPDES Permit Regulation, 9VAC25-31-220.C, for all permits issued to STPs.

Part I.D.12 **Annual Average Concentration Limits:** *New requirement.* 9VAC25-40-70.B authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.

Part I.D.13 **Effluent Monitoring Frequencies (Outfall 001):** *New requirement.* A reduction in monitoring frequency has been granted based on a history of permit compliance. To remain eligible for the reduction, the permittee shall not be issued a Notice of Violation related to the effluent limits for which reduced frequencies were granted. If the permittee fails to maintain the previous level of performance, the baseline monitoring frequencies shall be reinstated for those parameters that were previously granted a monitoring frequency reduction.

Part I.D.14 **Notification Levels:** *Identical to Part I.E.12 of the previous permit.* Required by the VPDES Permit Regulation 9VAC25-31-200.A for all manufacturing, commercial, mining, and silvicultural dischargers.

Part I.D.15 **Nutrient Monitoring Requirements for Discharges of Industrial Stormwater:** *New requirement.* Nonsignificant dischargers are subject to aggregate wasteload allocation for TN, TP, and sediments under the TMDL for the Chesapeake Bay. Monitoring of TN and TP is required in order to verify the aggregate WLAs. Refer to Guidance Memo No. 14-2011, Nutrient Monitoring for "Nonsignificant" Discharges to the Chesapeake Bay Watershed.

Part I.D.16 **Expansion of facilities that discharge to waters subject to the Chesapeake Bay TMDL:** *New requirement.* Refer to Guidance Memo No. 14-2011, Nutrient Monitoring for "Nonsignificant" Discharges to the Chesapeake Bay Watershed.

Part I.E.1 **General Stormwater Special Conditions:** *Updates Part I.F.1 of the previous permit.* VPDES Permit Regulation 9VAC25-31-10 defines discharges of stormwater from industrial activity in 9 industrial categories. 9VAC25-31-120 requires a permit for these discharges. The Stormwater Pollution Prevention Plan requirements of the permit are derived from the VPDES general permit for discharges of stormwater associated with industrial activity, 9VAC25-151-10 et seq. VPDES Permit Regulation, 9VAC25-31-220 K, requires use of best management practices where applicable to control or abate the discharge of pollutants when numeric effluent limits are infeasible or the practices are necessary to achieve effluent limit or to carry out the purpose and intent of the Clean Water Act and State Water Control Law. The sector-specific requirements are derived from the VPDES general permit for discharges under Sector U – Food and Kindred Products.

Part I.E.2 **Stormwater Pollution Prevention Plan:** *Updates Part I.F.2 of the previous permit.* See rationale above for general stormwater special conditions.

Part I.E.3 **Sector Specific Stormwater Pollution Prevention Plan Requirements:** *Updates Part I.F.3 of the previous permit.* See rationale above for general stormwater special conditions.

Attachment A **Updates Attachment A of the previous permit.**

Part II **Conditions Applicable to All VPDES Permits:** *Updates Part II of previous permit.* VPDES Permit Regulation 9VAC25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

DELETIONS

Tabulated below are the sections of the previous permit that were deleted and the basis for this action.

Part I.B.	**TRC Effluent Limitations and Monitoring Requirements** was removed from the permit. On October 17, 2014, the permittee requested that the draft permit language for chlorine disinfection be removed from the permit since the facility uses UV disinfection and there are no plans to ever switch to chlorine disinfection.